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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l88 bib abs hitstr tot

L88 ANSWER 1 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:1178522 HCAPLUS Full-text

DN 147:472119

TI Secondary nonaqueous electrolyte battery

IN Nishida, Nobumichi

PA SANYO Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 12pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2007273260	A	20071018	JP 2006-97602	20060331 <--
PRAI	JP 2006-97602		20060331	<--	

AB The battery has a cathode containing a cathode active mass, an anode containing an anode active mass, and a nonaq. electrolyte solution containing a nonaq. solvent and an electrolyte salt; where the charging voltage of the cathode is 4.4-5.1 V on lithium basis, the electrolyte solution further has a compound which reacts with the anode active mass and forms a coating; and the battery is prepared by repeatedly  $\geq 1$  time charging the battery until the potential of the cathode becomes 3.0-4.3 V and discharging until the potential of the cathode becomes 2.8-3.1V, and again charging until the potential of the cathode becomes  $\geq 4.4$  V.

IT 532934-38-6, Cobalt lithium manganese nickel oxide  
(Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 642999-33-5, Cobalt lithium magnesium zirconium oxide

RL: MOA (Modifier or additive use); USES (Uses)  
(structure and manufacture of secondary lithium batteries)

RN 532934-38-6 HCAPLUS  
 CN Cobalt lithium manganese nickel oxide (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.34	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 642999-33-5 HCAPLUS  
 CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

L88 ANSWER 2 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:1060515 HCAPLUS Full-text

DN 147:347219

TI Secondary batteries suppressing swelling on high-temperature storage and nonaqueous electrolytes therefor

IN Yamashita, Noriko; Iwanaga, Masato; Abe, Koji; Miyoshi, Kazuhiro

PA Sanyo Electric Co., Ltd., Japan; Ube Industries, Ltd.

SO Jpn. Kokai Tokkyo Koho, 10pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 2007242464	A	20070920	JP 2006-64400	20060309 <--
PRAI	JP 2006-64400		20060309	<--	

OS MARPAT 147:347219

AB The title batteries satisfy cathode potential (Li standard) 4.4-5.1 V and have nonaq. electrolytes (also claimed) containing R1OCOC.tplbond.CCO2R2 (R1, R2 = alkyl). The batteries may have cathode active masses containing Zr- and Mg-added Li cobaltates and Li Ni Mn complex oxides with layered structure. The batteries exhibit improved overcharge safety.

IT 182442-95-1P, Cobalt lithium manganese nickel oxide

642999-33-5P, Cobalt lithium magnesium zirconium oxide

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(cathode active mass; nonaq. electrolyte

secondary batteries containing dialkyl acetylenedicarboxylates to suppress high-temperature swelling)

RN 182442-95-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number

O		x		17778-80-2
Co		x		7440-48-4
Ni		x		7440-02-0
Mn		x		7439-96-5
Li		x		7439-93-2

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
O		x		17778-80-2
Zr		x		7440-67-7
Co		x		7440-48-4
Mg		x		7439-95-4
Li		x		7439-93-2

L88 ANSWER 3 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:1022586 HCAPLUS Full-text

DN 147:347105

TI Cathode active mass for secondary nonaqueous electrolyte battery and its manufacture

IN Jitsugiri, Yukio; Amagasaki, Yukiko; Kawasato, Takeshi; Saito, Naoshi; Kato, Tokumitsu; Wakasugi, Yukimitsu

PA AGC Seimi Chemical Co., Ltd., Japan

SO PCT Int. Appl., 32pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2007102407	A1	20070913	WO 2007-JP53968	20070301 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	KR 2008009147	A	20080124	KR 2007-727923	20071129 <--
	CN 101331631	A	20081224	CN 2007-80000673	20071229 <--
	US 20080160414	A1	20080703	US 2008-47481	20080313 <--
PRAI	JP 2006-56610	A	20060302	<--	
	WO 2007-JP53968	W	20070301		

AB The cathode active mass is represented by:  $\text{Li}p\text{A}x\text{M}y\text{O}z\text{F}a$  (A represents  $\geq 1$  element selected from Co, Mn and Ni; M represents  $\geq 1$  element selected from transition metal elements other than element A, Al, and alkaline earth metal elements;  $p = 0.9-1.1$ ;  $0.965 \leq x < 1.00$ ;  $0 < y \leq 0.035$ ;  $z = 1.9-2.1$ ;  $x + y = 1$ ; and  $a = 0-0.02$ ), and has a surface layer which comprises a Li-containing composite oxide powder containing zirconium; where in the surface layer the

zirconium/element A atomic ratio within 5 nm of the surface layer from the surface is  $\geq 1.0$ . The active mass is manufactured by stirring while adding a Zr-containing aqueous solution having pH 3-2 to a Li-containing composite oxide powder, and firing an O-containing atmospheric

IT 147683-99-6P, Cobalt lithium zirconium oxide 329082-61-3P  
 , Cobalt lithium zirconium oxide (Co<sub>0.99</sub>LiZr<sub>0.01</sub>O<sub>2</sub>) 678159-00-7P  
 , Aluminum cobalt lithium zirconium oxide 949014-26-0P, Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>Li<sub>1.05</sub>Mn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2.04</sub>)  
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (structure and manufacture of cathode active mass having Zr-containing Li composite oxide surface layers for secondary lithium batteries)

RN 147683-99-6 HCAPLUS

CN Cobalt lithium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Li	x	7439-93-2

RN 329082-61-3 HCAPLUS

CN Cobalt lithium zirconium oxide (Co<sub>0.99</sub>LiZr<sub>0.01</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Zr	0.01	7440-67-7
Co	0.99	7440-48-4
Li	1	7439-93-2

RN 678159-00-7 HCAPLUS

CN Aluminum cobalt lithium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Li	x	7439-93-2
Al	x	7429-90-5

RN 949014-26-0 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>Li<sub>1.05</sub>Mn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2.04</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2.04	17778-80-2
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1.05	7439-93-2

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 4 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN  
AN 2007:819603 HCAPLUS Full-text  
DN 147:215670  
TI Nonaqueous electrolyte secondary battery,  
nonaqueous electrolyte, and charging method therefor  
IN Iwanaga, Masato; Oki, Yukihiro; Abe, Koji; Miyoshi, Kazuhiro  
PA Sanyo Electric Co., Ltd., Japan; Ube Industries Ltd.  
SO U.S. Pat. Appl. Publ., 10pp.  
CODEN: USXXCO  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20070172730	A1	20070726	US 2007-656486	20070123 <--
	JP 2007200688	A	20070809	JP 2006-17286	20060126 <--
	CN 101009391	A	20070801	CN 2007-10001454	20070108 <--
	KR 2007078371	A	20070731	KR 2007-3840	20070112 <--
PRAI	JP 2006-17286	A	20060126	<--	

AB A nonaq. electrolyte secondary battery of the invention has a pos. electrode having a pos. electrode active material, a neg. electrode, and a nonaq. electrolyte having electrolyte salt in a nonaq. solvent. The elec. potential of the pos. electrode active material is 4.4 to 4.6 V relative to lithium, and the nonaq. electrolyte contains pentafluorophenol methanesulfonate. The quantity of compound added is preferably 0.1% to 2% by mass. Also, the pos. electrode active material preferably comprises a mixture of a lithium-cobalt composite oxide which is LiCoO<sub>2</sub> containing at least both zirconium and magnesium and a lithium-manganese-nickel composite oxide that has a layer structure and contains at least both manganese and nickel. Thanks to such structure, a nonaq. electrolyte secondary battery can be provided that is charged to charging termination potential of 4.4 to 4.6 V relative to lithium and that has enhanced overcharging safety.

IT 532934-38-6P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>)  
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(nonaq. electrolyte secondary battery,  
nonaq. electrolyte, and charging method therefor)

RN 532934-38-6 HCAPLUS  
CN Cobalt lithium manganese nickel oxide (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.34	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

IT 642999-33-5, Cobalt lithium magnesium zirconium oxide  
RL: TEM (Technical or engineered material use); USES (Uses)  
(nonaq. electrolyte secondary battery,  
nonaq. electrolyte, and charging method therefor)  
RN 642999-33-5 HCAPLUS  
CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

L88 ANSWER 5 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2006:1339339 HCAPLUS Full-text  
 DN 146:84663  
 TI Nonaqueous electrolyte secondary battery  
 IN Nishino, Hajime; Kasamatsu, Shinji; Takezawa, Hideharu; Okamura, Kazuhiro;  
 Shimada, Mikinari  
 PA Japan  
 SO U.S. Pat. Appl. Publ., 20pp., Cont.-in-part of U.S. Ser. No. 315,189.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 20060286445	A1	20061221	US 2006-473334	20060623 <--
	US 20060141341	A1	20060629	US 2005-315189	20051223 <--
PRAI	JP 2004-374200	A	20041224	<--	
	US 2005-315189	A2	20051223	<--	

AB Disclosed is a non-aqueous electrolyte secondary battery including: a pos.  
 electrode having a pos. electrode material mixture containing a composite  
 lithium oxide; a neg. electrode; a polyolefin separator; a non-aqueous  
 electrolyte; and a heat-resistant insulating layer interposed between the pos.  
 and neg. electrodes. The pos. electrode material mixture has an estimated  
 heat generation rate at 200° of not greater than 50 W/kg. The pos. electrode  
 and the neg. electrode are wound together with the separator and the heat-  
 resistant insulating layer interposed there between.

IT 142447-14-1, Cobalt lithium manganese oxide (Co<sub>0.98</sub>LiMn<sub>0.02</sub>O<sub>2</sub>)  
 193215-53-1, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.2</sub>LiMn<sub>0.3</sub>Ni<sub>0.5</sub>O<sub>2</sub>) 198213-70-6, Cobalt lithium magnesium  
 oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) 346417-97-8, Cobalt lithium manganese  
 nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 867249-18-1, Cobalt  
 lithium zirconium oxide (Co<sub>0.98</sub>LiZr<sub>0.02</sub>O<sub>2</sub>)

RL: TEM (Technical or engineered material use); USES (Uses)  
 (nonaq. electrolyte secondary battery)

RN 142447-14-1 HCAPLUS

CN Cobalt lithium manganese oxide (Co<sub>0.98</sub>LiMn<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mn	0.02	7439-96-5
Li	1	7439-93-2

RN 193215-53-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.2</sub>LiMn<sub>0.3</sub>Ni<sub>0.5</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.2	7440-48-4
Ni	0.5	7440-02-0
Mn	0.3	7439-96-5
Li	1	7439-93-2

RN 198213-70-6 HCAPLUS

CN Cobalt lithium magnesium oxide (Co0.98LiMg0.02O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.98	7440-48-4
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 346417-97-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 867249-18-1 HCAPLUS

CN Cobalt lithium zirconium oxide (Co0.98LiZr0.02O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Zr	0.02	7440-67-7
Co	0.98	7440-48-4
Li	1	7439-93-2

L88 ANSWER 6 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:1339314 HCAPLUS Full-text

DN 146:84662

TI Nonaqueous electrolyte secondary battery

IN Nishino, Hajime; Kasamatsu, Shinji; Takezawa, Hideharu; Okamura, Kazuhiro; Shimada, Mikinari

PA Japan

SO U.S. Pat. Appl. Publ., 22pp., Cont.-in-part of U.S. Ser. No. 315,189.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 3

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 20060286444	A1	20061221	US 2006-473327	20060623 <--

US 20060141341 A1 20060629 US 2005-315189 20051223 <--  
 PRAI JP 2004-374200 A 20041224 <--  
 US 2005-315189 A2 20051223 <--

AB Disclosed is a non-aqueous electrolyte secondary battery including: a pos. electrode having a pos. electrode material mixture containing a composite lithium oxide; a neg. electrode; a polyolefin separator; a non-aqueous electrolyte; and a heat-resistant insulating layer interposed between the pos. and neg. electrodes. The pos. electrode material mixture has an estimated heat generation rate at 200° of not greater than 50 W/kg. The pos. electrode and the neg. electrode are wound together with the separator and the heat-resistant insulating layer interposed there between.

IT 142447-14-1, Cobalt lithium manganese oxide (Co0.98LiMn0.02O2)  
 182442-95-1, Cobalt lithium manganese nickel oxide  
 193215-53-1, Cobalt lithium manganese nickel oxide  
 (Co0.2LiMn0.3Ni0.5O2) 198213-70-6, Cobalt lithium magnesium  
 oxide (Co0.98LiMg0.02O2) 346417-97-8, Cobalt lithium manganese  
 nickel oxide (Co0.33LiMn0.33Ni0.33O2) 867249-18-1, Cobalt  
 lithium zirconium oxide (Co0.98LiZr0.02O2)

RL: TEM (Technical or engineered material use); USES (Uses)  
 (nonaq. electrolyte secondary battery with improved  
 safety)

RN 142447-14-1 HCAPLUS

CN Cobalt lithium manganese oxide (Co0.98LiMn0.02O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mn	0.02	7439-96-5
Li	1	7439-93-2

RN 182442-95-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Mn	x	7439-96-5
Li	x	7439-93-2

RN 193215-53-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co0.2LiMn0.3Ni0.5O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.2	7440-48-4
Ni	0.5	7440-02-0
Mn	0.3	7439-96-5
Li	1	7439-93-2

RN 198213-70-6 HCAPLUS

CN Cobalt lithium magnesium oxide (Co0.98LiMg0.02O2) (CA INDEX NAME)



Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.98	7440-48-4
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 346417-97-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 867249-18-1 HCAPLUS

CN Cobalt lithium zirconium oxide (Co0.98LiZr0.02O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Zr	0.02	7440-67-7
Co	0.98	7440-48-4
Li	1	7439-93-2

L88 ANSWER 7 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:1094429 HCAPLUS Full-text

DN 145:401049

TI Secondary batteries containing lithium tetrafluoroborate in nonaqueous electrolytes, and method for charging the batteries

IN Tsutsumi, Shuji; Iwanaga, Masato; Oga, Keisuke; Nishida, Nobumichi

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 14pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2006286382	A	20061019	JP 2005-104283	20050331 <--
PRAI	JP 2005-104283		20050331	<--	

AB The batteries have cathode active mass with potential (based on Li) 4.4-4.6 V containing Zr- and Mg-containing LiCoO2 and layered Li Mn Ni mixed oxides, and 0.05-1.5% (based on weight of nonaq. electrolytes) LiBF4 in nonaq. electrolytes. The batteries show improved cycle efficiency and reduced swelling.

IT 532934-38-6P, Cobalt lithium manganese nickel oxide (Co0.34LiMn0.33Ni0.33O2) 642999-33-5P, Cobalt lithium magnesium zirconium oxide

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(cathode active mass; secondary batteries containing

lithium tetrafluoroborate in nonaq. electrolytes)

RN 532934-38-6 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.34	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

L88 ANSWER 8 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:1094404 HCAPLUS Full-text

DN 145:401047

TI Secondary nonaqueous electrolyte batteries bonded with pressure-sensitive adhesive tapes, and method for charging the batteries

IN Obayashi, Atsushi

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 11pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2006286337	A	20061019	JP 2005-103173	20050331 <--
PRAI	JP 2005-103173		20050331	<--	

AB The batteries have cathode active mass with potential (based on Li) 4.4-4.6 V containing (A) Zr- and Mg-containing Li Co mixed oxides and (B) layered Li Ni Mn mixed oxides, and pressure-sensitive adhesive tapes composed of substrate layers and rubber adhesive layers for protection, insulation, or prevention of unwinding of electrodes. The batteries have cathode active mass with improved thermal stability at high potential, and show improved safety and cycle efficiency.

IT 182442-95-1P, Cobalt lithium manganese nickel oxide

642999-33-5P, Cobalt lithium magnesium zirconium oxide

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(cathode active mass; secondary nonaq.

electrolyte batteries bonded with pressure-sensitive adhesive tapes)

RN 182442-95-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Mn	x	7439-96-5
Li	x	7439-93-2

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

L88 ANSWER 9 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:1094402 HCAPLUS Full-text

DN 145:401046

TI Secondary nonaqueous electrolyte batteries having cathode active mass with controlled size and shape, and method for charging the batteries

IN Inoue, Hidetoshi; Nishida, Nobumichi

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 12pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2006286336	A	20061019	JP 2005-103172	20050331 <--
PRAI	JP 2005-103172		20050331	<--	

AB The batteries have cathode active mass with potential (based on Li) 4.4-4.6 V containing (A) Zr- and Mg-containing Li Co mixed oxides with average particle size (X) 7-30  $\mu\text{m}$ , and (B) layered Li Ni Mn mixed oxides having average particle size (Y) 2-15  $\mu\text{m}$  and aggregated spherical or elliptical shapes with ratio of minor axis/major axis 0.80-1.0, satisfying  $X/Y = 1.4-15$ . The batteries have cathode active mass with improved thermal stability at high potential, and show improved safety and cycle efficiency.

IT 182442-95-1P, Cobalt lithium manganese nickel oxide

642999-33-5P, Cobalt lithium magnesium zirconium oxide

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(cathode active mass; secondary nonaq.

electrolyte batteries having cathode active mass with controlled size and shape)

RN 182442-95-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	x	17778-80-2
Co	x	7440-48-4

Ni		x		7440-02-0
Mn		x		7439-96-5
Li		x		7439-93-2

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O		x		17778-80-2
Zr		x		7440-67-7
Co		x		7440-48-4
Mg		x		7439-95-4
Li		x		7439-93-2

L88 ANSWER 10 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:918270 HCAPLUS Full-text

DN 145:274968

TI Nonaqueous electrolyte secondary battery

IN Iwanaga, Masato; Nishida, Nobumichi; Tsutsumi, Shuji

PA Sanyo Electric Co., Ltd., Japan

SO U.S. Pat. Appl. Publ., 9pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 20060199077	A1	20060907	US 2006-359965	20060223 <--
	JP 2006236725	A	20060907	JP 2005-48171	20050224 <--
	KR 2006094477	A	20060829	KR 2006-17530	20060223 <--
	CN 1825675	A	20060830	CN 2006-10009554	20060224 <--
PRAI	JP 2005-48171	A	20050224	<--	

AB The invention concerns a non-aqueous electrolyte secondary battery with excellent discharge cycle characteristics and a charging termination potential ranging from 4.4 to 4.6 V based on lithium, consisting of a pos. electrode comprising a pos. electrode active material, a neg. electrode, and a non-aqueous electrolyte containing a non-aqueous solvent and an electrolyte salt, in which the pos. electrode active material comprises a mixture of a lithium-cobalt composite oxide containing at least both zirconium and magnesium in LiCoO<sub>2</sub>, and a lithium-manganese-nickel composite oxide having a layered structure and containing at least both manganese and nickel, and the potential of the pos. electrode active material ranges from 4.4 to 4.6 V based on lithium, and the non-aqueous electrolyte contains at least one of aromatic compds. selected from the group consisting at least of toluene derivs., anisole derivs., biphenyl, cyclohexyl benzene, tert-Bu benzene, tert-amyl benzene, and di-Ph ether.

IT 182442-95-1, Cobalt lithium manganese nickel oxide  
 532934-38-6, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 642999-33-5, Cobalt lithium magnesium  
 zirconium oxide

RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte secondary battery)

RN 182442-95-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (CA INDEX NAME)

Component		Ratio		Component
				Registry Number

Component	Ratio	Component
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Mn	x	7439-96-5
Li	x	7439-93-2

RN 532934-38-6 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.34	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

L88 ANSWER 11 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:759804 HCAPLUS Full-text

DN 145:170774

TI Secondary lithium batteries capable of high-voltage charging, and their charging method

IN Nakagawa, Hiroshi; Asaoka, Kenji; Imai, Katsuya

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006202529	A	20060803	JP 2005-10417	20050118 <--
PRAI JP 2005-10417		20050118	<--	

AB The batteries employ cathode active mass which contain mixts. of Zr- and Mg-containing Li Co oxides, and layered Li Mn Ni oxides, and show 4.4-4.6 V potential (vs. Li), and ammonia-released CM-cellulose ammonium salt as anode binder. The batteries are charged at 4.4-4.6 V potential (vs. Li). The batteries show good charge-discharge cycling characteristics.

IT 532934-38-6P, Cobalt lithium manganese nickel oxide (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 642999-33-5P, Cobalt lithium magnesium zirconium oxide

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)

(cathode active mass; secondary Li battery with

cathode containing Li Co Zr Mg oxide and Li Mn Ni oxide, and  
CM-cellulose anode binder)

RN 532934-38-6 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.34	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

L88 ANSWER 12 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:635277 HCAPLUS Full-text

DN 145:106823

TI Secondary nonaqueous electrolyte battery

IN Nishino, Hajime; Kasamatsu, Shinji; Takezawa, Hideharu; Okamura, Kazuhiro;  
Shimada, Mikinari

PA Matsushita Electric Industrial Co., Ltd., Japan

SO PCT Int. Appl., 39 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2006068143	A1	20060629	WO 2005-JP23373	20051220 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	WO 2007072595	A1	20070628	WO 2006-JP312574	20060623 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN,				

MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU,  
 SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,  
 US, UZ, VC, VN, ZA, ZM, ZW  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
 IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,  
 CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,  
 GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM  
 WO 2007072596 A1 20070628 WO 2006-JP312575 20060623 <--  
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,  
 CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,  
 GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,  
 KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN,  
 MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU,  
 SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,  
 US, UZ, VC, VN, ZA, ZM, ZW  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
 IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,  
 CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,  
 GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM  
 EP 1819008 A1 20070815 EP 2006-767225 20060623 <--  
 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
 IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL,  
 BA, HR, MK, YU  
 CN 101069305 A 20071107 CN 2006-80001303 20060623 <--  
 EP 1881545 A1 20080123 EP 2006-767224 20060623 <--  
 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,  
 IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL,  
 BA, HR, MK, YU  
 KR 2007088678 A 20070829 KR 2007-712821 20070607 <--  
 KR 874557 B1 20081216  
 KR 2007098797 A 20071005 KR 2007-712936 20070608 <--  
 KR 874560 B1 20081216  
 CN 101160683 A 20080409 CN 2006-80001390 20070608 <--  
 PRAI JP 2004-374200 A 20041224 <--  
 WO 2005-JP23373 A 20051220 <--  
 WO 2006-JP312574 W 20060623 <--  
 WO 2006-JP312575 W 20060623 <--  
 AB The battery comprises a cathode having a Li composite oxide-containing cathode mixture on a cathode collector, an anode containing a Li-intercalating material, a separator containing a polyolefin resin, a nonaq. electrolyte solution, and a heat-resistant insulating layer interposed between the 2 electrodes; where The estimated heat generation rate of the cathode mixture at 200° is ≤50 W/kg; and the estimated heat generation rate is determined by determining the relationship between an absolute temperature T and a heat generation rate V of the cathode mixture with an accelerated rate calorimeter or an uncontrollable reaction measuring device (ARC), plotting the relationship between the reciprocal of the absolute temperature T as X axis and the logarithm of the heat generation rate V as Y axis according to the Arrhenius theorem, determining an approx. straight line matched with the plot present in the heat generation region of T < 200° (473 K), and extrapolating the approx. straight line to the temperature axis of T = 200° (473 K).  
 IT 142447-14-1, Cobalt lithium manganese oxide (Co<sub>0.98</sub>LiMn<sub>0.02</sub>O<sub>2</sub>)  
 193215-53-1, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.2</sub>LiMn<sub>0.3</sub>Ni<sub>0.5</sub>O<sub>2</sub>) 198213-70-6, Cobalt lithium magnesium  
 oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) 346417-97-8, Cobalt lithium manganese  
 nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 867249-18-1, Cobalt  
 lithium zirconium oxide (Co<sub>0.98</sub>LiZr<sub>0.02</sub>O<sub>2</sub>)  
 RL: DEV (Device component use); USES (Uses)

(structure of secondary lithium batteries having Li composite  
oxide-containing cathode mixts. with controlled heat  
generation rate)

RN 142447-14-1 HCAPLUS

CN Cobalt lithium manganese oxide (Co<sub>0.98</sub>LiMn<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mn	0.02	7439-96-5
Li	1	7439-93-2

RN 193215-53-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.2</sub>LiMn<sub>0.3</sub>Ni<sub>0.5</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.2	7440-48-4
Ni	0.5	7440-02-0
Mn	0.3	7439-96-5
Li	1	7439-93-2

RN 198213-70-6 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 346417-97-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 867249-18-1 HCAPLUS

CN Cobalt lithium zirconium oxide (Co<sub>0.98</sub>LiZr<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Zr	0.02	7440-67-7
Co	0.98	7440-48-4



Li | 1 | 7439-93-2

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 13 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:470248 HCAPLUS Full-text

DN 144:471465

TI Nonaqueous electrolyte secondary battery

IN Tode, Shingo; Fujimoto, Hiroyuki; Takahashi,  
Yasufumi; Kinoshita, Akira; Hasegawa, Kazuhiro;  
Fujitani, Shin

PA Sanyo Electric Co., Japan

SO U.S. Pat. Appl. Publ., 11 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20060105241	A1	20060518	US 2005-168380	20050629 <--
	US 7435510	B2	20081014		
	JP 2006164934	A	20060622	JP 2005-60288	20050304 <--
	KR 2006048698	A	20060518	KR 2005-57003	20050629 <--
	CN 1773765	A	20060517	CN 2005-10080727	20050630 <--
PRAI	JP 2004-329406	A	20041112	<--	
	JP 2005-60288	A	20050304	<--	

AB A nonaq. electrolyte secondary battery comprises a pos. electrode containing a pos. active material, a neg. electrode containing a neg. active material and a nonaq. electrolyte, wherein a lithium transition metal complex oxide A formed by allowing LiCoO<sub>2</sub> to contain at least both of Zr and Mg and a lithium transition metal complex oxide B having a layered structure and containing at least both of Mn and Ni as transition metals and containing Mo are mixed and used as the pos. active material.

IT 372492-00-7F, Aluminum cobalt lithium magnesium oxide  
(Al<sub>0.01</sub>Co<sub>0.98</sub>LiMg<sub>0.01</sub>O<sub>2</sub>)

RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)

(Zr-doped; nonaq. electrolyte secondary battery)

RN 372492-00-7 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.98</sub>LiMg<sub>0.01</sub>O<sub>2</sub>) (CA  
INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2
Co	0.98		7440-48-4
Mg	0.01		7439-95-4
Li	1		7439-93-2
Al	0.01		7429-90-5

IT 756879-33-1 886752-61-0 886752-62-1

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary battery)

RN 756879-33-1 HCAPLUS

CN Aluminum cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component	Registry Number
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Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2
Al	x	7429-90-5

RN 886752-61-0 HCAPLUS

CN Cobalt lithium magnesium titanium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Ti	x	7440-32-6
Mg	x	7439-95-4
Li	x	7439-93-2

RN 886752-62-1 HCAPLUS

CN Cobalt lithium magnesium tin zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Sn	x	7440-31-5
Mg	x	7439-95-4
Li	x	7439-93-2

IT 532934-38-6, Cobalt lithium manganese nickel oxide  
(Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>)

RL: MOA (Modifier or additive use); USES (Uses)  
(nonaq. electrolyte secondary battery)

RN 532934-38-6 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.34	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 14 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:1265113 HCAPLUS Full-text

DN 143:480485

TI Cathode active material and nonaqueous electrolyte  
secondary battery

IN Sato, Takashi; Yamamoto, Yoshikatsu; Hosoya, Yosuke

PA Sony Corporation, Japan  
 SO U.S. Pat. Appl. Publ., 15 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20050266315	A1	20051201	US 2005-132859	20050518 <--
	US 7214449	B2	20070508		
	JP 2005339970	A	20051208	JP 2004-156688	20040526 <--
	JP 4172423	B2	20081029		
	KR 2006049435	A	20060519	KR 2005-43044	20050523 <--
	CN 1702890	A	20051130	CN 2005-10073872	20050525 <--
	CN 100340017	C	20070926		
PRAI	JP 2004-156688	A	20040526	<--	

AB A cathode active material and non-aqueous electrolyte secondary battery are disclosed. The non-aqueous electrolyte secondary battery includes a pos. electrode and a neg. electrode which are electrochem. doped and dedoped with lithium; and an electrolyte disposed between the pos. electrode and the neg. electrode. The pos. electrode contains a cathode active material including a mixture of: a first cathode active material represented by a general formula:  $\text{LiCoMsO}_2$  where M represents a metal,  $0 \leq s \leq 0.03$ , and  $0.05 \leq t \leq 1.15$ ; and a second cathode active material represented by a general formula:  $\text{Li}_x\text{Ni}_{(1-y-z)}\text{Co}_y\text{Mn}_z\text{AaO}_2$  where A represents a metal,  $0.05 \leq x \leq 1.15$ ,  $0.15 \leq y+z \leq 0.70$ ,  $0.05 \leq z \leq 0.40$ , and  $0 \leq a \leq 0.10$ .

IT 345664-06-4P, Cobalt lithium magnesium oxide ( $\text{CoLiMg}_{0.03}\text{O}_2$ )  
 681160-59-8P, Cobalt lithium manganese nickel oxide  
 ( $\text{Co}_{0.3}\text{LiMn}_{0.4}\text{Ni}_{0.3}\text{O}_2$ ) 869789-30-0P, Cobalt lithium manganese  
 nickel oxide ( $\text{Co}_{0.1}\text{Li}_{1.05}\text{Mn}_{0.05}\text{Ni}_{0.85}\text{O}_2$ ) 869789-31-1P, Cobalt  
 lithium manganese nickel oxide ( $\text{Co}_{0.65}\text{Li}_{1.05}\text{Mn}_{0.05}\text{Ni}_{0.3}\text{O}_2$ )  
 869789-33-3P, Cobalt lithium manganese nickel oxide  
 ( $\text{Co}_{0.3}\text{Li}_{1.05}\text{Mn}_{0.4}\text{Ni}_{0.3}\text{O}_2$ ) 869789-35-5P, Aluminum cobalt lithium  
 magnesium oxide ( $\text{Al}_{0.02}\text{CoLiMg}_{0.02}\text{O}_2$ )  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)  
 (cathode active material and nonaq. electrolyte  
 secondary battery)

RN 345664-06-4 HCAPLUS

CN Cobalt lithium magnesium oxide ( $\text{CoLiMg}_{0.03}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2
Co	1		7440-48-4
Mg	0.03		7439-95-4
Li	1		7439-93-2

RN 681160-59-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.3}\text{LiMn}_{0.4}\text{Ni}_{0.3}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2
Co	0.3		7440-48-4
Ni	0.3		7440-02-0

Mn		0.4		7439-96-5
Li		1		7439-93-2

RN 869789-30-0 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.1</sub>Li<sub>1.05</sub>Mn<sub>0.05</sub>Ni<sub>0.85</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		2		17778-80-2
Co		0.1		7440-48-4
Ni		0.85		7440-02-0
Mn		0.05		7439-96-5
Li		1.05		7439-93-2

RN 869789-31-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.65</sub>Li<sub>1.05</sub>Mn<sub>0.05</sub>Ni<sub>0.30</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		2		17778-80-2
Co		0.65		7440-48-4
Ni		0.3		7440-02-0
Mn		0.05		7439-96-5
Li		1.05		7439-93-2

RN 869789-33-3 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.3</sub>Li<sub>1.05</sub>Mn<sub>0.4</sub>Ni<sub>0.30</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		2		17778-80-2
Co		0.3		7440-48-4
Ni		0.3		7440-02-0
Mn		0.4		7439-96-5
Li		1.05		7439-93-2

RN 869789-35-5 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al<sub>0.02</sub>CoLiMg<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		2		17778-80-2
Co		1		7440-48-4
Mg		0.02		7439-95-4
Li		1		7439-93-2
Al		0.02		7429-90-5

RE.CNT 6      THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 15 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:1076074 HCAPLUS Full-text

DN 143:369992  
 TI Secondary nonaqueous electrolyte battery  
 IN Takahashi, Yasufumi; Kinoshita, Akira; Tode,  
 Shingo; Hasegawa, Kazuhiro; Fujimoto, Hiroyuki;  
 Nakane, Ikuro; Fujitani, Shin  
 PA Sanyo Electric Co., Ltd., Japan  
 SO PCT Int. Appl., 25 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2005093880	A1	20051006	WO 2005-JP3723	20050304 <--	
	W:			AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW		
	RW:			BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG		
	JP 2005317499	A	20051110	JP 2004-320394	20041104 <--	
	EP 1734601	A1	20061220	EP 2005-719995	20050304 <--	
	R:			DE, FR, GB		
	CN 1934733	A	20070321	CN 2005-80009615	20050304 <--	
	US 20070196736	A1	20070823	US 2006-594459	20060926 <--	
	KR 2006132968	A	20061222	KR 2006-720099	20060928 <--	
PRAI	JP 2004-94475	A	20040329	<--		
	JP 2004-320394	A	20041104	<--		
	WO 2005-JP3723	W	20050304	<--		

AB The battery uses a cathode active mass comprising a substituted LiCoO<sub>2</sub>, containing at least Zr and Mg, and a layer structured Li transition metal oxide containing at least Mn and/or Ni. Preferably, the substituted LiCoO<sub>2</sub> is Li<sub>a</sub>Co<sub>1-x-y-z</sub>Zr<sub>x</sub>Mg<sub>y</sub>Mn<sub>z</sub>O<sub>2</sub>, where M = Al, Ti, and/or Sn, z<sub>a</sub> ≤ 1.1, x > 0, y > 0, z > 0 and (x+y+z) ≤ 0.03; and the Li transition metal oxide is Li<sub>b</sub>Mn<sub>s</sub>Ni<sub>t</sub>Co<sub>u</sub>O<sub>2</sub>, where b ≤ 1.2, 0 < s ≤ 0.5, 0 < t ≤ 0.5, u ≥ 0, and (ss+t+u) = 1.

IT 372492-00-7, Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.98</sub>LiMg<sub>0.01</sub>O<sub>2</sub>) 866331-36-4, Cobalt lithium manganese nickel oxide (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>3</sub>)  
 RL: DEV (Device component use); USES (Uses)  
 (mixts. of lithium transition metal oxides for secondary lithium battery cathodes)

RN 372492-00-7 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.98</sub>LiMg<sub>0.01</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.98	7440-48-4
Mg	0.01	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

RN 866331-36-4 HCAPLUS  
 CN Cobalt lithium manganese nickel oxide (Co<sub>0.34</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>3</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Co	0.34	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 16 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:1049231 HCAPLUS Full-text

DN 143:349928

TI Nonaqueous electrolyte secondary batteries with  
 lithium mixed oxide cathodes

IN Matsui, Toru; Deguchi, Masaki; Yoshizawa, Hiroshi

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 2005267911	A	20050929	JP 2004-75110	20040316 <--
PRAI	JP 2004-75110		20040316	<--	

AB The batteries comprise cathodes including LiAO<sub>2</sub> (A is  $\geq 2$  selected from Mn, Co, and Ni) or LiB<sub>1</sub>-wCwO<sub>2</sub> (B = Mn, Co, and/or Ni; C = Mg, Ca, Sr, Al, and/or Ga; w = 0.005-0.1) as active materials, anodes, and nonaq. electrolytes including a main solvent, solute, and diallyl carbonate as additive. The electrolytes may also contain vinylene carbonate as additive. The batteries show excellent cycle performance and prevented emission of gases at high temperature

IT 101920-93-8, Cobalt lithium nickel oxide (Co<sub>0.5</sub>LiNi<sub>0.5</sub>O<sub>2</sub>)  
 113066-89-0, Cobalt lithium nickel oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>)  
 118819-08-2, Cobalt lithium manganese oxide (Co<sub>0.5</sub>LiMn<sub>0.5</sub>O<sub>2</sub>)  
 142447-10-7, Cobalt lithium manganese oxide (Co<sub>0.75</sub>LiMn<sub>0.25</sub>O<sub>2</sub>)  
 143623-49-8, Cobalt lithiumnickel oxide (Co<sub>0.25</sub>LiNi<sub>0.75</sub>O<sub>2</sub>)  
 144419-56-7, Cobalt lithium magnesium oxide (Co<sub>0.95</sub>LiMg<sub>0.05</sub>O<sub>2</sub>)  
 149319-02-8, Cobalt lithium nickel oxide (Co<sub>0.75</sub>LiNi<sub>0.25</sub>O<sub>2</sub>)  
 152066-41-6, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.45</sub>LiMn<sub>0.1</sub>Ni<sub>0.45</sub>O<sub>2</sub>) 198213-70-6, Cobalt lithium magnesium  
 oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) 248581-94-4, Cobalt lithium manganese  
 oxide (Co<sub>0.5</sub>Li<sub>2</sub>Mn<sub>1.5</sub>O<sub>4</sub>) 346417-97-8, Cobalt lithium manganese  
 nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 405890-05-3, Cobalt  
 lithium manganese nickel oxide (Co<sub>0.1</sub>LiMn<sub>0.45</sub>Ni<sub>0.45</sub>O<sub>2</sub>) 865649-43-0  
 , Cobalt lithium manganese nickel oxide (Co<sub>0.45</sub>LiMn<sub>0.45</sub>Ni<sub>0.1</sub>O<sub>2</sub>)  
 RL: DEV (Device component use); TEM (Technical or engineered material  
 use); USES (Uses)

(cathode active material; secondary batteries with  
 lithium mixed oxide cathodes and nonaq.  
 electrolytes containing diallyl carbonate as additives)

RN 101920-93-8 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.5</sub>LiNi<sub>0.5</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Ni	0.5	7440-02-0
Li	1	7439-93-2

RN 113066-89-0 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.2	7440-48-4
Ni	0.8	7440-02-0
Li	1	7439-93-2

RN 118819-08-2 HCAPLUS

CN Cobalt lithium manganese oxide (Co<sub>0.5</sub>LiMn<sub>0.5</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	1	7439-93-2

RN 142447-10-7 HCAPLUS

CN Cobalt lithium manganese oxide (Co<sub>0.75</sub>LiMn<sub>0.25</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.75	7440-48-4
Mn	0.25	7439-96-5
Li	1	7439-93-2

RN 143623-49-8 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.25</sub>LiNi<sub>0.75</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.25	7440-48-4
Ni	0.75	7440-02-0
Li	1	7439-93-2

RN 144419-56-7 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.95</sub>LiMg<sub>0.05</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.95	7440-48-4

Mg		0.05		7439-95-4
Li		1		7439-93-2

RN 149319-02-8 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.75</sub>LiNi<sub>0.25</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O		2		17778-80-2
Co		0.75		7440-48-4
Ni		0.25		7440-02-0
Li		1		7439-93-2

RN 152066-41-6 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.45</sub>LiMn<sub>0.1</sub>Ni<sub>0.45</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O		2		17778-80-2
Co		0.45		7440-48-4
Ni		0.45		7440-02-0
Mn		0.1		7439-96-5
Li		1		7439-93-2

RN 198213-70-6 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O		2		17778-80-2
Co		0.98		7440-48-4
Mg		0.02		7439-95-4
Li		1		7439-93-2

RN 248581-94-4 HCAPLUS

CN Cobalt lithium manganese oxide (Co<sub>0.5</sub>Li<sub>2</sub>Mn<sub>1.5</sub>O<sub>4</sub>) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O		4		17778-80-2
Co		0.5		7440-48-4
Mn		1.5		7439-96-5
Li		2		7439-93-2

RN 346417-97-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
=====	+	=====	+	=====
O		2		17778-80-2
Co		0.33		7440-48-4
Ni		0.33		7440-02-0
Mn		0.33		7439-96-5



Li | 1 | 7439-93-2

RN 405890-05-3 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.1</sub>LiMn<sub>0.45</sub>Ni<sub>0.45</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.1	7440-48-4
Ni	0.45	7440-02-0
Mn	0.45	7439-96-5
Li	1	7439-93-2

RN 865649-43-0 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.45</sub>LiMn<sub>0.45</sub>Ni<sub>0.10</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.45	7440-48-4
Ni	0.1	7440-02-0
Mn	0.45	7439-96-5
Li	1	7439-93-2

L88 ANSWER 17 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2004:1020204 HCAPLUS Full-text

DN 142:9225

TI Nonaqueous electrolyte secondary battery and charge/discharge system thereof

IN Watanabe, Shoichiro; Nagayama, Masatoshi; Kuranaka, So

PA Matsushita Electric Industrial Co. Ltd., Japan

SO PCT Int. Appl., 37 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	-----	-----	-----	-----
PI	WO 2004102701	A1	20041125	WO 2004-JP6620	20040511 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	JP 2004342500	A	20041202	JP 2003-138849	20030516 <--
	CN 1735985	A	20060215	CN 2004-80011814	20040511 <--
	CN 100373663	C	20080305		
	EP 1655793	A1	20060510	EP 2004-732213	20040511 <--
	R: DE, FR, GB				

US 20060194109 A1 20060831 US 2005-552920 20051011 <--  
 KR 790270 B1 20080102 KR 2005-720899 20051103 <--  
 PRAI JP 2003-138849 A 20030516 <--  
 WO 2004-JP6620 W 20040511 <--

AB The disclosed nonaq. electrolyte secondary comprises a pos. electrode composed of a pos. electrode mix layer, a neg. electrode composed of a neg. electrode mix layer, a separator or a lithium ion-conductive porous film interposed between the pos. electrode and the neg. electrode, and a lithium ion-conductive nonaq. electrolyte. The pos. electrode mix layer contains a pos. electrode active material composed of a lithium-transition metal composite oxide, and the lithium-transition metal composite oxide contains lithium, a transition metal and a metal other than the transition metal. The neg. electrode mix layer contains a neg. electrode active material composed of a carbon material. In the region where the pos. electrode mix layer and the neg. electrode mix layer face each other, the ratio (R: Wp/Wn) of the weight of the pos. electrode active material (Wp) contained in the pos. electrode mix layer per unit area to the weight of the neg. electrode active material (Wn) contained in the neg. electrode mix layer per unit area is 1.3-2.2. In the normal operation, the charging final voltage of this nonaq. electrolyte secondary battery is set at 4.25-4.5 V.

IT 144419-56-7, Cobalt lithium magnesium oxide (Co0.95LiMg0.05O2)  
 372491-83-3, Aluminum cobalt lithium magnesium oxide  
 (Al0.01Co0.94LiMg0.05O2) 372492-00-7, Aluminum cobalt lithium  
 magnesium oxide (Al0.01Co0.98LiMg0.01O2) 405890-05-3, Cobalt  
 lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) 478814-69-6  
 , Aluminum cobalt lithium magnesium oxide (Al0.05Co0.9LiMg0.05O2)  
 719276-54-7, Aluminum cobalt lithium magnesium oxide  
 (Al0.01Co0.94Li1.01Mg0.05O2) 798575-07-2, Aluminum cobalt  
 lithium magnesium oxide (Al0.01Co0.94Li1.02Mg0.05O2) 798575-08-3  
 , Aluminum cobalt lithium magnesium oxide (Al0.01Co0.94Li1.03Mg0.05O2)  
 798575-10-7, Aluminum cobalt lithium magnesium oxide  
 (Al0.05Co0.85LiMg0.1O2) 798575-11-8, Aluminum cobalt lithium  
 magnesium oxide (Al0.02Co0.88LiMg0.1O2)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathode active substance for lithium secondary  
 battery)

RN 144419-56-7 HCAPLUS

CN Cobalt lithium magnesium oxide (Co0.95LiMg0.05O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.95	7440-48-4
Mg	0.05	7439-95-4
Li	1	7439-93-2

RN 372491-83-3 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al0.01Co0.94LiMg0.05O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.94	7440-48-4
Mg	0.05	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

RN 372492-00-7 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al0.01Co0.98LiMg0.01O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.98	7440-48-4
Mg	0.01	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

RN 405890-05-3 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co0.1LiMn0.45Ni0.45O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.1	7440-48-4
Ni	0.45	7440-02-0
Mn	0.45	7439-96-5
Li	1	7439-93-2

RN 478814-69-6 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al0.05Co0.9LiMg0.05O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.9	7440-48-4
Mg	0.05	7439-95-4
Li	1	7439-93-2
Al	0.05	7429-90-5

RN 719276-54-7 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al0.01Co0.94Li1.01Mg0.05O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.94	7440-48-4
Mg	0.05	7439-95-4
Li	1.01	7439-93-2
Al	0.01	7429-90-5

RN 798575-07-2 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al0.01Co0.94Li1.02Mg0.05O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2

Co		0.94		7440-48-4
Mg		0.05		7439-95-4
Li		1.02		7439-93-2
Al		0.01		7429-90-5

RN 798575-08-3 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.94</sub>Li<sub>1.03</sub>Mg<sub>0.05</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		2		17778-80-2
Co		0.94		7440-48-4
Mg		0.05		7439-95-4
Li		1.03		7439-93-2
Al		0.01		7429-90-5

RN 798575-10-7 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al<sub>0.05</sub>Co<sub>0.85</sub>LiMg<sub>0.10</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		2		17778-80-2
Co		0.85		7440-48-4
Mg		0.1		7439-95-4
Li		1		7439-93-2
Al		0.05		7429-90-5

RN 798575-11-8 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al<sub>0.02</sub>Co<sub>0.88</sub>LiMg<sub>0.10</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		2		17778-80-2
Co		0.88		7440-48-4
Mg		0.1		7439-95-4
Li		1		7439-93-2
Al		0.02		7429-90-5

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 18 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2004:796473 HCAPLUS Full-text

DN 141:263471

TI Cathode active material for nonaqueous electrolyte  
secondary batteryIN Takahashi, Takeshi; Oba, Takeshi; Fujino, Kenji; Tokuno, Junichi;  
Morizaki, Masuhiro; Kondo, Takeyuki; Seyama, Jun

PA Nichia Corporation, Japan

SO Eur. Pat. Appl., 54 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1463132	A2	20040929	EP 2004-7076	20040324 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
	JP 2005050712	A	20050224	JP 2003-282341	20030730 <--
	JP 2005123111	A	20050512	JP 2003-358885	20031020 <--
	JP 2005190900	A	20050714	JP 2003-432856	20031226 <--
	JP 2004311408	A	20041104	JP 2004-42699	20040219 <--
	TW 286849	B	20070911	TW 2004-93105565	20040303 <--
	KR 2004084643	A	20041006	KR 2004-17292	20040315 <--
	US 20040229123	A1	20041118	US 2004-806206	20040323 <--
	CN 1532966	A	20040929	CN 2004-10007990	20040325 <--
	CN 100355125	C	20071212		
PRAI	JP 2003-83806	A	20030325	<--	
	JP 2003-282341	A	20030730	<--	
	JP 2003-358885	A	20031020	<--	
	JP 2003-432856	A	20031226	<--	

AB Disclosed is a pos. electrode active material for a nonaq. electrolyte secondary battery having at least a lithium-transition metal composite oxide of a layer structure, in which an existence ratio of at least one selected from the group consisting of elements which may become tetravalent and magnesium is 20% or more on a surface of the lithium-transition metal composite oxide. By use of this pos. electrode active material, a nonaq. electrolyte secondary battery having excellent battery characteristics, specifically, having excellent high rate characteristics, cycle characteristics, low-temperature characteristics, thermal stability, and the like, under the even more harsh environment for use can be realized.

IT 131344-56-4, Cobalt lithium nickel oxide 182442-95-1,  
Cobalt lithium manganese nickel oxide

RL: DEV (Device component use); USES (Uses)  
(cathode active material for nonaq. electrolyte  
secondary battery)

RN 131344-56-4 HCAPLUS

CN Cobalt lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	x		17778-80-2
Co	x		7440-48-4
Ni	x		7440-02-0
Li	x		7439-93-2

RN 182442-95-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	x		17778-80-2
Co	x		7440-48-4
Ni	x		7440-02-0
Mn	x		7439-96-5
Li	x		7439-93-2

IT 147683-99-6P, Cobalt lithium zirconium oxide 187144-48-5P  
, Cobalt lithium magnesium oxide 642999-33-5P, Cobalt lithium  
magnesium zirconium oxide 756879-33-1P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)

(cathode active material for nonaq. electrolyte  
secondary battery)

RN 147683-99-6 HCAPLUS

CN Cobalt lithium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Li	x	7439-93-2

RN 187144-48-5 HCAPLUS

CN Cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

RN 642999-33-5 HCAPLUS

CN Cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

RN 756879-33-1 HCAPLUS

CN Aluminum cobalt lithium magnesium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2
Al	x	7429-90-5

L88 ANSWER 19 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2004:584872 HCAPLUS Full-text

DN 141:126312

TI Nonaqueous-electrolyte secondary battery with cathode  
containing acetylene black

IN Miyazaki, Shinya

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004207034	A	20040722	JP 2002-374598	20021225 <--
	JP 4145138	B2	20080903		
PRAI	JP 2002-374598		20021225	<--	

AB The claimed battery is equipped with a cathode containing a Li ion-intercalating active mass and (1) a first acetylene black having sp. surface area 35-45 m<sup>2</sup>/g and (2) a second acetylene black having sp. surface area 65-75 m<sup>2</sup>/g as conducting agents, where each content of the first acetylene black and the second acetylene black is 1-2 weight% to the cathode active mass. The battery provides excellent high-rate discharge capacity and long cycle life.

IT 346417-97-8, Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 579501-01-2, Cobalt lithium zirconium oxide (Co<sub>0.9</sub>LiZr<sub>0.1</sub>O<sub>2</sub>)

RL: DEV (Device component use); USES (Uses)

(cathode; nonaq.-electrolyte secondary battery with cathode containing acetylene black)

RN 346417-97-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 579501-01-2 HCAPLUS

CN Cobalt lithium zirconium oxide (Co<sub>0.9</sub>LiZr<sub>0.1</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Zr	0.1	7440-67-7
Co	0.9	7440-48-4
Li	1	7439-93-2

L88 ANSWER 20 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2004:533748 HCAPLUS Full-text

DN 141:74296

TI Nonaqueous electrolyte rechargeable battery

IN Nagayama, Masatoshi; Yoshizawa, Hiroshi

PA Matsushita Electric Industrial Co., Ltd., Japan

SO U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20040126661	A1	20040701	US 2003-730049	20031209 <--
	US 7255963	B2	20070814		

JP 2004207120 A 20040722 JP 2002-376664 20021226 <--  
 JP 3844733 B2 20061115  
 PRAI JP 2002-376664 A 20021226 <--

AB A nonaq. electrolyte rechargeable battery includes: (a) a pos. electrode capable of charging and discharging lithium; (b) a neg. electrode capable of charging and discharging lithium; (c) a separator or a lithium ion conductive layer interposed between the pos. electrode and the neg. electrode; and (d) a lithium ion conductive nonaq. electrolyte, wherein the pos. electrode contains a mixture of a first pos. electrode active material and a second pos. electrode active material, the first pos. electrode active material includes lithium oxide containing manganese, the lithium oxide further contains aluminum and/or magnesium, and the second pos. electrode active material includes  $\text{Li}_x\text{Co}_{1-y-z}\text{Mg}_y\text{Al}_z\text{O}_2$  where  $1 \leq x \leq 1.03$ ,  $0.005 \leq y \leq 0.1$  and  $0.001 \leq z < 0.02$ .

IT 142447-12-9, Cobalt lithiummanganese oxide  $\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_2$   
 372491-83-3, Aluminum cobalt lithium magnesium oxide  
 $\text{Al}_{0.01}\text{Co}_{0.94}\text{LiMg}_{0.05}\text{O}_2$  642999-49-3, Aluminum cobalt lithium  
 magnesium oxide 709654-49-9, Cobalt lithium magnesium titanium  
 oxide ( $\text{Co}_{0.94}\text{LiMg}_{0.05}\text{Ti}_{0.01}\text{O}_2$ )

RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte rechargeable battery)

RN 142447-12-9 HCAPLUS

CN Cobalt lithium manganese oxide ( $\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.95	7440-48-4
Mn	0.05	7439-96-5
Li	1	7439-93-2

RN 372491-83-3 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide ( $\text{Al}_{0.01}\text{Co}_{0.94}\text{LiMg}_{0.05}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.94	7440-48-4
Mg	0.05	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

RN 642999-49-3 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2
Al	x	7429-90-5

RN 709654-49-9 HCAPLUS

CN Cobalt lithium magnesium titanium oxide ( $\text{Co}_{0.94}\text{LiMg}_{0.05}\text{Ti}_{0.01}\text{O}_2$ ) (CA INDEX NAME)



Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.94	7440-48-4
Ti	0.01	7440-32-6
Mg	0.05	7439-95-4
Li	1	7439-93-2

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 21 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN  
AN 2004:161245 HCAPLUS Full-text  
DN 140:166823  
TI Nonaqueous electrolyte secondary battery  
IN Hideki, Kitao; Takao, Inoue; Katsunori, Yanagida; Naoya, Nakanishi;  
Atsuhiko, Funahashi; Toshiyuki, Nohma  
PA Sanyo Electric Co., Ltd., Japan  
SO Eur. Pat. Appl., 11 pp.  
CODEN: EPXXDW

DT Patent  
LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	EP 1391959	A2	20040225	EP 2003-18837	20030819 <--
	EP 1391959	A3	20061213		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
	IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2004139743	A	20040513	JP 2002-297739	20021010 <--
	KR 2004018154	A	20040302	KR 2003-57443	20030820 <--
	US 20040110064	A1	20040610	US 2003-604826	20030820 <--
	US 7198871	B2	20070403		
PRAI	JP 2002-240610	A	20020821	<--	
	JP 2002-297739	A	20021010	<--	

AB In a nonaq. electrolyte secondary battery provided with a pos. electrode, a neg. electrode, and a nonaq. electrolyte solution, a pos. electrode active material is a mixture of lithium-manganese composite oxide and at least one of lithium-nickel composite oxide represented by: LiNiaM11-aO2 and lithium-cobalt composite oxide represented by the general formula LiCobM21-bO2, and the nonaq. electrolyte solution contains at least a saturated cyclic carbonic acid ester and an unsatd. cyclic carbonic acid ester having double bond of carbon where content by amount of the unsatd. cyclic carbonic acid ester having double bond of carbon is in a range of  $1.0 \times 10^{-8}$  to  $2.4 \times 10^{-4}$  g per pos. electrode capacity 1 mA-h.

IT 131344-56-4, Cobalt Lithium nickel oxide 147683-99-6,  
Cobalt Lithium zirconium oxide 182442-95-1, Cobalt Lithium  
manganese nickel oxide 187144-48-5, Cobalt Lithium magnesium  
oxide 214536-41-1, Cobalt lithium manganese oxide  
217309-43-8, Cobalt lithium manganese nickel oxide  
Co0.3LiMn0.3Ni0.4O2

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary battery)

RN 131344-56-4 HCAPLUS

CN Cobalt lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====

O		x		17778-80-2
Co		x		7440-48-4
Ni		x		7440-02-0
Li		x		7439-93-2

RN 147683-99-6 HCAPLUS

CN Cobalt lithium zirconium oxide (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====				
O		x		17778-80-2
Zr		x		7440-67-7
Co		x		7440-48-4
Li		x		7439-93-2

RN 182442-95-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====				
O		x		17778-80-2
Co		x		7440-48-4
Ni		x		7440-02-0
Mn		x		7439-96-5
Li		x		7439-93-2

RN 187144-48-5 HCAPLUS

CN Cobalt lithium magnesium oxide (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====				
O		x		17778-80-2
Co		x		7440-48-4
Mg		x		7439-95-4
Li		x		7439-93-2

RN 214536-41-1 HCAPLUS

CN Cobalt lithium manganese oxide (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====				
O		x		17778-80-2
Co		x		7440-48-4
Mn		x		7439-96-5
Li		x		7439-93-2

RN 217309-43-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.3</sub>LiMn<sub>0.3</sub>Ni<sub>0.402</sub>) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====				
O		2		17778-80-2
Co		0.3		7440-48-4
Ni		0.4		7440-02-0

Mn	0.3	7439-96-5
Li	1	7439-93-2

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 22 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN  
AN 2004:78030 HCAPLUS Full-text  
DN 140:131122  
TI Nonaqueous-electrolyte battery with cathode containing  
plural lithium mixed oxides  
IN Ukawa, Shinsaku  
PA Sony Corp., Japan  
SO Jpn. Kokai Tokkyo Koho, 15 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004031165	A	20040129	JP 2002-186698	20020626 <--
PRAI	JP 2002-186698		20020626	<--	
AB	The claimed battery is equipped with a cathode containing $\text{Li}_x\text{Co}_1\text{-yMyO}_2$ ( $\text{M} = \text{Al, Mg, or Mn}$ ; $0 < x \leq 1$ ; $0 < y \leq 0.5$ ) and 0.1-50 weight% $\text{Li}_x\text{Ni}_1\text{-zCo}_z\text{MyO}_2$ ( $\text{M} = \text{Al, Mg, or Mn}$ ; $0 < x \leq 1$ ; $0 < y \leq 0.5$ ; $0 < z \leq 0.5$ ). The battery provides high capacity and tolerance for overdischarge.				
IT	142447-14-1, Cobalt lithium manganese oxide ( $\text{Co}_0.98\text{LiMn}_0.02\text{O}_2$ ) 203005-82-7, Cobalt lithium manganese nickel oxide ( $\text{Co}_0.15\text{LiMn}_0.05\text{Ni}_0.8\text{O}_2$ ) 372492-00-7, Aluminum cobalt lithium magnesium oxide ( $\text{Al}_0.01\text{Co}_0.98\text{LiMg}_0.01\text{O}_2$ ) 649560-56-5, Aluminum cobalt lithium magnesium oxide ( $\text{Al}_0.01\text{Co}_0.97\text{LiMg}_0.02\text{O}_2$ ) RL: DEV (Device component use); USES (Uses) (nonaq.-electrolyte battery with cathode containing plural lithium mixed oxides)				
RN	142447-14-1 HCAPLUS				
CN	Cobalt lithium manganese oxide ( $\text{Co}_0.98\text{LiMn}_0.02\text{O}_2$ ) (CA INDEX NAME)				

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.98	7440-48-4
Mn	0.02	7439-96-5
Li	1	7439-93-2

RN 203005-82-7 HCAPLUS  
CN Cobalt lithium manganese nickel oxide ( $\text{Co}_0.15\text{LiMn}_0.05\text{Ni}_0.8\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.15	7440-48-4
Ni	0.8	7440-02-0
Mn	0.05	7439-96-5
Li	1	7439-93-2

RN 372492-00-7 HCAPLUS  
CN Aluminum cobalt lithium magnesium oxide ( $\text{Al}_0.01\text{Co}_0.98\text{LiMg}_0.01\text{O}_2$ ) (CA

INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mg	0.01	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

RN 649560-56-5 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al0.01Co0.97LiMg0.02O2) (CA  
INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.97	7440-48-4
Mg	0.02	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

L88 ANSWER 23 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2003:757156 HCAPLUS Full-text

DN 139:248085

TI Nonaqueous electrolyte secondary battery

IN Inoue, Takao; Yanagida, Katsunori; Nakanishi, Naoya; Funahashi, Atsuhiko;  
Nohma, Toshiyuki

PA Japan

SO U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 20030180618	A1	20030925	US 2003-392083	20030320 <--
	JP 2003282055	A	20031003	JP 2002-83153	20020325 <--
PRAI	JP 2002-83153	A	20020325	<--	

AB The invention relates to a nonaq. electrolyte secondary battery having a pos. electrode including a pos. electrode active material, a neg. electrode and a nonaq. electrolyte comprising a solute dissolved in a solvent, the pos. electrode active material is a mixture of a lithium-manganese composite oxide and a lithium-nickel composite oxide represented by LiNi<sub>a</sub>M<sub>1</sub>1-aO<sub>2</sub> (M<sub>1</sub> being at least one element selected from the group consisting of B, Mg, Al, Ti, Mn, V, Fe, Co, Cu, Zn, Ga, Y, Zr, Nb, Mo and In, and a being 0<a≤1) and/or a lithium-cobalt composite oxide represented by LiCo<sub>b</sub>M<sub>2</sub>1-bO<sub>2</sub> (M<sub>2</sub> being at least one element selected from the group consisting of B, Mg, Al, Ti, Mn, V, Fe, Ni, Cu, Zn, Ga, Y, Zr, Nb, Mo and In, and b being 0<b≤1), and the nonaq. electrolyte contains a phosphoric ester and an ether or an ester having a halogen substituted Ph.

IT 135573-53-4, Cobalt lithium nickel oxide Co<sub>0.1</sub>LiNi<sub>0.1</sub>O<sub>2</sub>

217309-43-8, Cobalt lithium manganese nickel

oxideCo<sub>0.3</sub>LiMn<sub>0.3</sub>Ni<sub>0.4</sub>O<sub>2</sub> 253875-65-9, Cobalt lithium manganeseoxide ((Co,Mn)LiO<sub>2</sub>) 527744-92-9, Cobalt lithium magnesium oxide((Co,Mg)LiO<sub>2</sub>) 600177-64-8, Cobalt lithium zirconium oxide((Co,Zr)LiO<sub>2</sub>)

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary battery)

RN 135573-53-4 HCAPLUS

CN Cobalt lithium nickel oxide ((Co,Ni)LiO<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0 - 1	7440-48-4
Ni	0 - 1	7440-02-0
Li	1	7439-93-2

RN 217309-43-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.3</sub>LiMn<sub>0.3</sub>Ni<sub>0.4</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.3	7440-48-4
Ni	0.4	7440-02-0
Mn	0.3	7439-96-5
Li	1	7439-93-2

RN 253875-65-9 HCAPLUS

CN Cobalt lithium manganese oxide ((Co,Mn)LiO<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mn	0 - 1	7439-96-5
Li	1	7439-93-2

RN 527744-92-9 HCAPLUS

CN Cobalt lithium magnesium oxide ((Co,Mg)LiO<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mg	0 - 1	7439-95-4
Li	1	7439-93-2

RN 600177-64-8 HCAPLUS

CN Cobalt lithium zirconium oxide ((Co,Zr)LiO<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Zr	0 - 1	7440-67-7
Co	0 - 1	7440-48-4
Li	1	7439-93-2

L88 ANSWER 24 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2002:827863 HCAPLUS Full-text

DN 137:313559

TI Secondary nonaqueous-electrolyte battery with  
cathode containing two kinds of lithium mixed oxides

IN Watanabe, Shoichiro; Nagayama, Masatoshi; Takeno, Mitsuhiro

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002319398	A	20021031	JP 2001-122449	20010420 <--
PRAI	JP 2001-122449		20010420	<--	

AB The title battery is equipped with a cathode containing a first active material  $\text{Li}_x\text{Co}_y\text{MwO}_z$  ( $x = 0.9-1.10$ ;  $y = 0.85-0.98$ ;  $w = 0.02-0.15$ ;  $z = 1.8-2.2$ ;  $M = \text{Al, Cu, Zn, Mg, Ca, Ba, and/or Sr}$ ) and a second active material  $\text{LiANiBM'COD}$  ( $A = 0.3-1.02$ ;  $B = 0.5-0.98$ ;  $C = 0.02-0.5$ ;  $D = 1.8-2.2$ ;  $M' = \text{Co, Mn, Cr, Fe, V, and/or Al}$ ). Also claimed is an overdischarging prevention circuit-free system equipped with the battery. The battery has high discharge capacity at low temperature, recovery after overdischarging, and thermal stability while overcharging.

IT 143623-51-2, Cobalt lithium nickel oxide ( $\text{Co}_{0.15}\text{LiNi}_{0.85}\text{O}_2$ )  
198213-74-0, Cobalt lithium magnesium oxide ( $\text{Co}_{0.9}\text{LiMg}_{0.1}\text{O}_2$ )  
441310-71-0, Cobalt lithium magnesium oxide ( $\text{Co}_{0.9}\text{Li}_{0.95}\text{Mg}_{0.15}\text{O}_2$ )

RL: DEV (Device component use); USES (Uses)

(cathode active material; cathode containing two kinds  
of lithium mixed oxides for nonaq. battery in  
overdischarging prevention circuit-free system)

RN 143623-51-2 HCAPLUS

CN Cobalt lithium nickel oxide ( $\text{Co}_{0.15}\text{LiNi}_{0.85}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2
Co	0.15		7440-48-4
Ni	0.85		7440-02-0
Li	1		7439-93-2

RN 198213-74-0 HCAPLUS

CN Cobalt lithium magnesium oxide ( $\text{Co}_{0.9}\text{LiMg}_{0.1}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2
Co	0.9		7440-48-4
Mg	0.1		7439-95-4
Li	1		7439-93-2

RN 441310-71-0 HCAPLUS

CN Cobalt lithium magnesium oxide ( $\text{Co}_{0.9}\text{Li}_{0.95}\text{Mg}_{0.15}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2

Co		0.9		7440-48-4
Mg		0.15		7439-95-4
Li		0.95		7439-93-2

L88 ANSWER 25 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2002:669535 HCAPLUS Full-text  
 DN 137:203960  
 TI Lithium secondary battery  
 IN Sunagawa, Takuya; Takahashi, Masatoshi; Miyamoto, Yoshikumi  
 PA Sanyo Electric Co., Ltd., Japan  
 SO Eur. Pat. Appl., 20 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
	-----	---	-----	-----	-----	
PI	EP 1237213	A2	20020904	EP 2002-3999	20020222	<--
	EP 1237213	A3	20051123			
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR					
	JP 2002251996	A	20020906	JP 2001-47891	20010223	<--
	TW 543227	B	20030721	TW 2002-91102885	20020220	<--
	US 20020164528	A1	20021107	US 2002-79590	20020222	<--
	US 6818351	B2	20041116			
	KR 794051	B1	20080110	KR 2002-9451	20020222	<--
	CN 1372341	A	20021002	CN 2002-105277	20020225	<--
	CN 1238917	C	20060125			
	HK 1049917	A1	20060623	HK 2003-101998	20030318	<--
PRAI	JP 2001-47891	A	20010223	<--		

AB A lithium secondary battery having improved load characteristics such as high rate discharge properties is obtained by using a mixed cathode active material comprising a mixture of lithium-containing manganese oxide having a spinel type crystal structure and lithium-containing cobalt oxide, wherein the cathode collector retains mixed cathode active material in such a manner that the mixing ratio of lithium cobaltate X thereof should fall in a range of  $0.1 \leq X \leq 0.9$ , that the bulk d. Y (g/cm<sup>3</sup>) of the cathode mixed agent should be confined in a range satisfying the relation of  $0.5X + 2.7 \leq Y \leq 0.6X + 3.3$ , and that the mean particle diameter of spinel type lithium manganate should be greater than the mean particle diameter of lithium cobaltate.

IT 214536-41-1, Cobalt Lithium manganese oxide 452332-02-4,  
 Cobalt lithium magnesium oxide (Co<sub>0.9</sub>-1LiMg<sub>0-0.102</sub>) 452332-10-4,  
 Cobalt lithium nickel oxide (Co<sub>0.9</sub>-1LiNi<sub>0-0.102</sub>)  
 RL: DEV (Device component use); USES (Uses)  
 (lithium secondary battery having improved load characteristics)

RN 214536-41-1 HCAPLUS

CN Cobalt lithium manganese oxide (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
O		x		17778-80-2
Co		x		7440-48-4
Mn		x		7439-96-5
Li		x		7439-93-2

RN 452332-02-4 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.9</sub>-1LiMg<sub>0-0.102</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.9 - 1	7440-48-4
Mg	0 - 0.1	7439-95-4
Li	1	7439-93-2

RN 452332-10-4 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.9</sub>-1LiNi<sub>0</sub>-0.1O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.9 - 1	7440-48-4
Ni	0 - 0.1	7440-02-0
Li	1	7439-93-2

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 26 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2000:628414 HCAPLUS Full-text

DN 133:180409

TI Secondary nonaqueous electrolyte lithium batteries

IN Sunagawa, Takuya; Fujimoto, Hiroyuki; Ohshita, Ryuji;  
Fujitani, Shin

PA Sanyo Electric Co., Ltd., Japan

SO PCT Int. Appl., 38 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000052773	A1	20000908	WO 2000-JP731	20000209 <--
	W: CA, HU, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	JP 2000315503	A	20001114	JP 1999-358615	19991217 <--
	JP 3869605	B2	20070117		
	CA 2365562	A1	20000908	CA 2000-2365562	20000209 <--
	CA 2365562	C	20070710		
	EP 1174937	A1	20020123	EP 2000-902892	20000209 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	HU 2002000246	A2	20020729	HU 2002-246	20000209 <--
	EP 1885011	A2	20080206	EP 2007-10817	20000209 <--
	EP 1885011	A3	20080220		
	R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
	US 6746800	B1	20040608	US 2001-914653	20010831 <--
PRAI	JP 1999-52741	A	19990301	<--	
	JP 1999-358615	A	19991217	<--	
	EP 2000-902892	A3	20000209	<--	
	WO 2000-JP731	W	20000209	<--	

AB The batteries use cathodes comprised of a mixture of a spinel type 3rd metal containing Li Mn oxide and Li<sub>1</sub>M<sub>3</sub>Ni<sub>1</sub>CodO<sub>2</sub>; where M = Al, Mn, Mg, and/or Ti; 0



$a < 1.3$ ;  $0.02 \leq b \leq 0.3$ ;  $0.02 \leq [d/(c+d)] \leq 0.9$ ; and  $(b+c+d) = 1$ . The 3rd metal containing oxide is preferably  $\text{Li}_x\text{Mn}_2\text{-yM'yO}_4\text{+z}$ , where  $\text{M}' = \text{Al, Co, Ni, Mg}$ , and/or  $\text{Fe}$ ;  $0 \leq x \leq 1.2$ ;  $0 < y \leq 0.1$ ,  $-0.2 \leq z \leq 0.2$ .

IT 198213-74-0, Cobalt lithium magnesium oxide ( $\text{Co}_{0.9}\text{LiMg}_{0.102}$ )

223923-05-5, Cobalt lithium manganese nickel oxide  
( $\text{Co}_{0.3}\text{LiMn}_{0.1}\text{Ni}_{0.602}$ )

RL: DEV (Device component use); USES (Uses)

(mixts. of substituted spinel type lithium manganese oxide  
and lithium cobalt nickel oxide for secondary lithium battery  
cathodes)

RN 198213-74-0 HCAPLUS

CN Cobalt lithium magnesium oxide ( $\text{Co}_{0.9}\text{LiMg}_{0.102}$ ) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.9	7440-48-4
Mg	0.1	7439-95-4
Li	1	7439-93-2

RN 223923-05-5 HCAPLUS

CN Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.3}\text{LiMn}_{0.1}\text{Ni}_{0.602}$ ) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.3	7440-48-4
Ni	0.6	7440-02-0
Mn	0.1	7439-96-5
Li	1	7439-93-2

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L88 ANSWER 27 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2000:362771 HCAPLUS Full-text

DN 133:7030

TI Secondary nonaqueous-electrolyte batteries with  
cathodes containing coated lithium mixed oxides

IN Kitano, Shinya

PA Japan Storage Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000149950	A	20000530	JP 1998-326431	19981117 <--
PRAI JP 1998-326431		19981117	<--	

AB The batteries are equipped with cathodes containing particles of  $\text{LiNi}_{1-y}\text{-zCo}_y\text{M}_z\text{O}_2$  ( $y = 0-0.25$ ;  $z = 0-0.15$ ;  $\text{M}$  is a metal other than  $\text{Co, Ni}$ ) coated with  $\text{LiCo}_{1-x}\text{Mg}_x\text{O}_2$  ( $0.01 \leq x < 0.1$ ) having single-layer structure. The batteries have high capacity and high-rate discharge performance.

IT 113066-89-0P, Cobalt lithium nickel oxide ( $\text{Co}_{0.2}\text{LiNi}_{0.802}$ )

RL: DEV (Device component use); PNU (Preparation, unclassified); PREP

(Preparation); USES (Uses)

(coated lithium mixed oxides in cathodes for  
batteries)

RN 113066-89-0 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.2	7440-48-4
Ni	0.8	7440-02-0
Li	1	7439-93-2

IT 198213-69-3, Cobalt Lithium Magnesium oxide (Co<sub>0.99</sub>LiMg<sub>0.01</sub>O<sub>2</sub>)

270920-57-5, Cobalt lithium magnesium oxide

(Co<sub>0.9-0.99</sub>LiMg<sub>0.01-0.1</sub>O<sub>2</sub>)

RL: DEV (Device component use); USES (Uses)

(coatings; coated lithium mixed oxides in cathodes  
for batteries)

RN 198213-69-3 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.99</sub>LiMg<sub>0.01</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.99	7440-48-4
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 270920-57-5 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.9-0.99</sub>LiMg<sub>0.01-0.1</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.9 - 0.99	7440-48-4
Mg	0.01 - 0.1	7439-95-4
Li	1	7439-93-2

IT 144419-56-7P, Cobalt Lithium Magnesium oxide (Co<sub>0.95</sub>LiMg<sub>0.05</sub>O<sub>2</sub>)198213-71-7P, Cobalt Lithium Magnesium oxide (Co<sub>0.97</sub>LiMg<sub>0.03</sub>O<sub>2</sub>)RL: DEV (Device component use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)(coatings; coated lithium mixed oxides in cathodes  
for batteries)

RN 144419-56-7 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.95</sub>LiMg<sub>0.05</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.95	7440-48-4
Mg	0.05	7439-95-4
Li	1	7439-93-2

RN 198213-71-7 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.97</sub>LiMg<sub>0.03</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.97	7440-48-4
Mg	0.03	7439-95-4
Li	1	7439-93-2

L88 ANSWER 28 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2000:32604 HCAPLUS Full-text

DN 132:80911

TI Cathode active mass containing lithium cobalt mixed oxide for secondary nonaqueous-electrolyte batteries and batteries using it

IN Takimoto, Yasuyuki; Hiyama, Susumu; Yamashita, Junichi

PA Seimi Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 2000012022	A	20000114	JP 1998-176323	19980623 <--
PRAI	JP 1998-176323		19980623	<--	

AB The cathode active mass contains Li<sub>x</sub>CoO<sub>2</sub> (0 < x ≤ 1.25) showing spin concentration ≤ 1 + 10<sup>18</sup> nos./g measured by ESR at g = 2.15. Also claimed is the cathode active mass containing Li<sub>x</sub>MyCo<sub>1-y</sub>O<sub>2</sub> (0 < x ≤ 1.25; 0 < y ≤ 0.25; M = Ti, V, Zr, Cr, Mn, Ni, Fe, Nb, Ta, Sn, Sb, Bi, Mg, Ca, Sr, Ba, Ce, Pr, and/or Tb) showing spin concentration ≤ 1 + 10<sup>18</sup> nos./g measured by ESR at g = 2.15. The batteries are equipped with Li-intercalating anodes and cathodes containing the above active mass. The batteries have good heat stability during charging-discharging.

IT 131344-56-4, Cobalt Lithium Nickel oxide 147683-99-6, Cobalt Lithium Zirconium oxide 198213-70-6, Cobalt Lithium Magnesium oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) 214536-41-1, Cobalt Lithium Manganese oxide

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(lithium cobalt mixed oxides having specified electron spin concentration in cathodes for nonaq. batteries)

RN 131344-56-4 HCAPLUS

CN Cobalt lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Li	x	7439-93-2

RN 147683-99-6 HCAPLUS

CN Cobalt lithium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number

O		x		17778-80-2
Zr		x		7440-67-7
Co		x		7440-48-4
Li		x		7439-93-2

RN 198213-70-6 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
O		2		17778-80-2
Co		0.98		7440-48-4
Mg		0.02		7439-95-4
Li		1		7439-93-2

RN 214536-41-1 HCAPLUS

CN Cobalt lithium manganese oxide (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
O		x		17778-80-2
Co		x		7440-48-4
Mn		x		7439-96-5
Li		x		7439-93-2

L88 ANSWER 29 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1998:586185 HCAPLUS Full-text

DN 129:233157

OREF 129:47379a,47382a

TI Bilayered granular lithium mixed oxide compositions  
and lithium ion secondary batteries using them as  
cathodes

IN Aoki, Masashi; Fukai, Kyoshi; Nakao, Hitoshi

PA Sakai Chemical Industry Co., Ltd., Sakai, Japan

SO Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10236826	A	19980908	JP 1997-84293	19970225 <--
	JP 4161382	B2	20081008		
PRAI	JP 1997-84293		19970225	<--	

AB The granular compns. consist of Li Ni mixed oxide cores and Li Co mixed oxide coating layers, whereas Co/(Ni + Co) atomic ratio is 0.2-1 at a part between the grain surfaces and 0.1  $\mu$ m depth from the surfaces. Preferably, the cores are Li<sub>p</sub>Ni<sub>1-x</sub>A<sub>x</sub>O<sub>y</sub> (A = B, Mg, Al, Si, Sc, Ti, V, Cr, Mn, Fe, Co, Cu, Zn, Ga, Y, Zr, Nb, Mo, Ru, Sn, Sb, La, Ce, Pr, Nb, Hf, Ta, Pb; p = 0.90-1.10; x = 0-0.25; y = 1.825-2.3). Preferably, the coating layers are Li<sub>q</sub>Co<sub>1-a</sub>ZaOb (Z = B, Mg, Al, Si, Sc, Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, Ga, Y, Zr, Nb, Mo, Ru, Sn, Sb, La, Ce, Pr, Nd, Hf, Ta, Pb; q = 0.90-1.10; a = 0-0.25; b = 1.825-2.3). Li ion secondary batteries use the compns. as cathodes. The batteries inhibit reaction between the cathodes and nonaq. electrolytes and show improved high-temperature stability.

IT 157925-46-7P, Cobalt lithium magnesium oxide (Co<sub>0.9</sub>LiMg<sub>0.1</sub>O<sub>1.95</sub>)

199926-74-4P, Cobalt lithium nickel oxide (Co<sub>0.85</sub>LiNi<sub>0.15</sub>O<sub>2</sub>)

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(coatings; core-sheath Li mixed oxide grains for Li ion secondary battery cathodes)

RN 157925-46-7 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.9</sub>LiMg<sub>0.101.95</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.95	17778-80-2
Co	0.9	7440-48-4
Mg	0.1	7439-95-4
Li	1	7439-93-2

RN 199926-74-4 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.85</sub>LiNi<sub>0.15</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.85	7440-48-4
Ni	0.15	7440-02-0
Li	1	7439-93-2

IT 143623-51-2P, Cobalt lithium nickel oxide (Co<sub>0.15</sub>LiNi<sub>0.85</sub>O<sub>2</sub>)

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(cores; core-sheath Li mixed oxide grains for Li ion secondary battery cathodes)

RN 143623-51-2 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.15</sub>LiNi<sub>0.85</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.15	7440-48-4
Ni	0.85	7440-02-0
Li	1	7439-93-2

L88 ANSWER 30 OF 30 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1995:804336 HCAPLUS Full-text

DN 123:204334

OREF 123:36303a,36306a

TI Nonaqueous secondary battery containing lithium intercalated mixed tin oxide anodes for suppressed lithium dendrite growth and improved characteristics

IN Idota, Yoshio; Mishima, Masayuki; Miyaki, Yukio; Kubota, Tadahiko; Miyasaka, Tsutomu

PA Fuji Photo Film Co., Ltd., Japan

SO Eur. Pat. Appl., 48 pp

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE

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PI  EP 651450      A1  19950503      EP 1994-116643      19941021 <--
    EP 651450      B1  19990107
      R:  DE, FR, GB, IT
    JP 07122274    A   19950512      JP 1993-264995      19931022 <--
    JP 07220721    A   19950818      JP 1994-7760        19940127 <--
    JP 3498345     B2  20040216
    JP 07235293    A   19950905      JP 1994-26745        19940224 <--
    JP 07249409    A   19950926      JP 1994-66422        19940311 <--
    JP 07288123    A   19951031      JP 1994-220858        19940824 <--
    JP 3498380     B2  20040216
    US 5618640     A   19970408      US 1994-326365        19941020 <--
    CA 2134052     A1  19950423      CA 1994-2134052        19941021 <--
    EP 814522      A2  19971229      EP 1997-110038        19941021 <--
    EP 814522      A3  19990512
    EP 814522      B1  20060329
      R:  DE, FR, GB, IT
    EP 814523      A2  19971229      EP 1997-110039        19941021 <--
    EP 814523      A3  19990512
    EP 814523      B1  20060329
      R:  DE, FR, GB, IT
    US 5780181     A   19980714      US 1996-756628        19961126 <--
    US 5965293     A   19991012      US 1998-33687         19980303 <--
    JP 2004087499  A   20040318      JP 2003-319511        20030911 <--
    JP 3729193     B2  20051221
PRAI JP 1993-264995  A   19931022 <--
    JP 1994-7760    A   19940127 <--
    JP 1994-26745   A   19940224 <--
    JP 1994-30206   A   19940228 <--
    JP 1994-66422   A   19940311 <--
    US 1994-326365  A3  19941020 <--
    EP 1994-116643  A3  19941021 <--
    US 1996-756628  A3  19961126 <--
AB   In the nonaq. secondary battery comprising a cathode active material, anode
      active material, and Li salt, the anode active material contains (1) a
      compound capable of intercalating and deintercalating Li comprising an atom of
      Groups IIIB, IVB (especially Sn) or VB, (2) an amorphous compound containing
      ≥2 atoms selected from Groups IIIB, IVB, and VB, (3) a compound capable of
      intercalating and deintercalating Li containing ≥1 of atoms of Groups IIIB,
      IVB, and VB, and F, or (4) a compound of the metal of Groups IIIB, IVB or VB,
      Zn, or Mg which is capable of intercalating and deintercalating Li. The
      nonaq. secondary battery exhibits improved charge and discharge
      characteristics and suppressed Li dendrite growth.
IT   101920-93-8, Cobalt lithium nickel oxide (Co0.5LiNi0.5O2)
      167994-80-1, Cobalt lithium zirconium oxide (CoLiZr0.06O2)
      167994-81-2, Cobalt lithium zirconium oxide (CoLiZr0.08O2)
      167994-85-6, Cobalt lithium zirconium oxide (CoLiZr0.02O2)
      RL: DEV (Device component use); USES (Uses)
          (cathodes; nonaq. secondary battery
            containing lithium intercalated mixed tin oxide anodes)
RN   101920-93-8 HCAPLUS
CN   Cobalt lithium nickel oxide (Co0.5LiNi0.5O2) (CA INDEX NAME)

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Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Ni	0.5	7440-02-0
Li	1	7439-93-2

RN 167994-80-1 HCAPLUS

CN Cobalt lithium zirconium oxide (CoLiZr0.0602) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Zr	0.06	7440-67-7
Co	1	7440-48-4
Li	1	7439-93-2

RN 167994-81-2 HCAPLUS

CN Cobalt lithium zirconium oxide (CoLiZr0.0802) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Zr	0.08	7440-67-7
Co	1	7440-48-4
Li	1	7439-93-2

RN 167994-85-6 HCAPLUS

CN Cobalt lithium zirconium oxide (CoLiZr0.0202) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Zr	0.02	7440-67-7
Co	1	7440-48-4
Li	1	7439-93-2

=&gt; =&gt; d l84 bib abs hitstr tot

L84 ANSWER 1 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:1092921 HCAPLUS Full-text

DN 147:409770

TI Method of preparing cathode active material for battery

IN Ooyama, Tomoyo; Watanabe, Haruo; Soma, Masanori

PA Sony Corporation, Japan

SO U.S. Pat. Appl. Publ., 16pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 20070224506	A1	20070927	US 2007-685571	20070313 <--
	JP 2007258095	A	20071004	JP 2006-83700	20060324 <--
PRAI	JP 2006-83700	A	20060324	<--	

AB A cathode active material capable of further improving chemical stability, a method of manufacturing the cathode active material, and a battery using the cathode active material are provided. The cathode includes a cathode active material in which a coating layer made of a compound including Li, at least one selected from Ni and Mg, and O is arranged on complex oxide particles represented by  $\text{Li}_{1+x}\text{Co}_1\text{yMyO}_{2-z}$ , where M is at least one kind selected from

the group consisting of Mg, Al, B, Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, Mo, Sn, W, Zr, Y, Nb, Ca and Sr, and the values of x, y and z are within a range of  $-0.10 \leq x \leq 0.10$ ,  $0 \leq y < 0.50$  and  $-0.10 \leq z \leq 0.20$ , resp. A surface layer made of an oxide including at least one kind selected from the group consisting of Ti, Si, Mg and Zr is formed on the coating layer.

IT 131344-56-4, Cobalt lithium nickel oxide 147683-99-6,  
Cobalt lithium zirconium oxide 187144-48-5, Cobalt lithium  
magnesium oxide 214536-41-1, Cobalt lithium manganese oxide  
372492-00-7, Aluminum cobalt lithium magnesium oxide  
(Al<sub>0.01</sub>Co<sub>0.98</sub>LiMg<sub>0.0102</sub>) 642999-49-3, Aluminum cobalt lithium  
magnesium oxide  
RL: TEM (Technical or engineered material use); USES (Uses)  
(method of preparing cathode active material for battery)  
RN 131344-56-4 HCAPLUS  
CN Cobalt lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Li	x	7439-93-2

RN 147683-99-6 HCAPLUS  
CN Cobalt lithium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Li	x	7439-93-2

RN 187144-48-5 HCAPLUS  
CN Cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

RN 214536-41-1 HCAPLUS  
CN Cobalt lithium manganese oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Mn	x	7439-96-5
Li	x	7439-93-2

RN 372492-00-7 HCAPLUS  
CN Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.98</sub>LiMg<sub>0.0102</sub>) (CA  
INDEX NAME)



Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.98	7440-48-4
Mg	0.01	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

RN 642999-49-3 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2
Al	x	7429-90-5

L84 ANSWER 2 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:1028932 HCAPLUS Full-text

DN 147:368502

TI Secondary battery material and synthesis method

IN Liu, Hongjian; Kepler, Keith Douglas; Wang, Yu

PA USA

SO U.S. Pat. Appl. Publ., 11pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20070212608	A1	20070913	US 2007-717272	20070313 <--
	CN 101043076	A	20070926	CN 2007-10005666	20070313 <--
PRAI	US 2006-781886P	P	20060313	<--	

AB Disclosed is a composite  $\text{Li}_{1+x}\text{Mn}_2\text{-x-yMyO}_4$  cathode material stabilized by treatment with a second transition metal oxide phase that is highly suitable for use in high power and energy d. Li-ion cells and batteries. A method for treating a  $\text{Li}_{1+x}\text{Mn}_2\text{-x-yMyO}_4$  cathode material utilizes a dry mixing and firing process.

IT 131344-56-4, Cobalt lithium nickel oxide 187144-48-5, Cobalt lithium magnesium oxide 214536-41-1, Cobalt lithium manganese oxide

RL: TEM (Technical or engineered material use); USES (Uses)  
(secondary battery material and synthesis method)

RN 131344-56-4 HCAPLUS

CN Cobalt lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Li	x	7439-93-2

RN 187144-48-5 HCAPLUS

CN Cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

RN 214536-41-1 HCAPLUS

CN Cobalt lithium manganese oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mn	x	7439-96-5
Li	x	7439-93-2

L84 ANSWER 3 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:379658 HCAPLUS Full-text

DN 146:383519

TI Manufacture of lithium-containing composite oxide for secondary  
lithium battery cathodeIN Yamada, Ryoji; Tatsumi, Koji; Nakaoka, Shogo; Ito, Kenji; Hiratsuka,  
Kazuya

PA Seimi Chemical Co., Ltd., Japan

SO PCT Int. Appl., 27pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	WO 2007037235	A1	20070405	WO 2006-JP319075	20060926 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	FI 2007000556	A	20070718	FI 2007-556	20070718 <--
	US 20070264573	A1	20071115	US 2007-828009	20070725 <--
	KR 2008048986	A	20080603	KR 2007-720737	20070910 <--
	CN 101146746	A	20080319	CN 2006-80009420	20070924 <--
PRAI	JP 2005-282535	A	20050928	<--	
	WO 2006-JP319075	W	20060926	<--	

AB The title oxide, represented by: LipNxMyOzFa (N is ≥1 element selected from  
Co, Mn, and Ni; M is ≥1 element selected from transition metals other than the

N elements, Al, and alkaline earth metals;  $p = 0.9-1.2$ ;  $x = 0.95-2.00$ ;  $0 < y \leq 0.05$ ;  $z = 1.9-4.2$ ; and  $a = 0-0.05$ ), is manufactured by mixing an aqueous solution of a M-element source with a N-element source in a powdered or pulverized form to obtain a slurry, drying/granulating the slurry, mixing with a lithium source and optionally a fluorine source powder, and firing the mixture comprising the Li source, the N-element source, and the M-element source and optionally containing the fluorine source in an O-containing atmospheric at 700-1100°.

IT 913699-28-2P, Cobalt lithium manganese nickel oxide  
(Co<sub>0.32</sub>Li<sub>1.02</sub>Mn<sub>0.32</sub>Ni<sub>0.32</sub>O<sub>2</sub>) 932378-91-1P, Aluminum cobalt  
lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.97</sub>Li<sub>1.01</sub>Mg<sub>0.01</sub>O<sub>2</sub>)  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material  
use); PREP (Preparation); USES (Uses)  
(manufacture of lithium-containing composite oxides for secondary  
lithium battery cathodes)  
RN 913699-28-2 HCAPLUS  
CN Cobalt lithium manganese nickel oxide (Co<sub>0.32</sub>Li<sub>1.02</sub>Mn<sub>0.32</sub>Ni<sub>0.32</sub>O<sub>2</sub>) (CA  
INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.32	7440-48-4
Ni	0.32	7440-02-0
Mn	0.32	7439-96-5
Li	1.02	7439-93-2

RN 932378-91-1 HCAPLUS  
CN Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.97</sub>Li<sub>1.01</sub>Mg<sub>0.01</sub>O<sub>2</sub>) (CA  
INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.97	7440-48-4
Mg	0.01	7439-95-4
Li	1.01	7439-93-2
Al	0.01	7429-90-5

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 4 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
AN 2007:167993 HCAPLUS Full-text  
DN 147:127648  
TI Physical and electrochemical characterization of LiCo<sub>0.8</sub>M<sub>0.2</sub>O<sub>2</sub> (M=Ni,Zr)  
cathode films for all-solid-state rechargeable thin-film lithium  
batteries  
AU Li, Chi-lin; Liu, Wen-yuan; Fu, Zheng-wen  
CS Department of Chemistry & Laser Chemistry Institute, Shanghai Key  
Laboratory of Molecular Catalysts and Innovative Materials, Fudan  
University, Shanghai, 200433, Peop. Rep. China  
SO Chinese Journal of Chemical Physics (2006), 19(6), 493-498  
CODEN: CJCPA6; ISSN: 1003-7713  
PB Science Press  
DT Journal  
LA English

AB LiCo<sub>0.8</sub>M<sub>0.2</sub>O<sub>2</sub> (M = Ni,Zr) films were fabricated by radio frequency sputtering deposition combined with conventional annealing methods. The structures of the films were characterized with XRD, Raman spectroscopy and SEM techniques. The 700°-annealed LiCo<sub>0.8</sub>M<sub>0.2</sub>O<sub>2</sub> has an  $\alpha$ -NaFeO<sub>2</sub>-like layered structure. All-solid-state thin-film batteries (TFBs) were fabricated with these films as the cathode and their electrochem. performances were evaluated. Doping of electrochem. active Ni and inactive Zr has different effects on the structural and electrochem. properties of the LiCoO<sub>2</sub> cathode films. Ni doping increases the discharge capacity of the film while Zr doping improves its cycling stability.

IT 113066-91-4P, Cobalt lithium nickel oxide (Co<sub>0.8</sub>LiNi<sub>0.2</sub>O<sub>2</sub>)  
 943217-72-9P, Cobalt lithium zirconium oxide (Co<sub>0.8</sub>LiZr<sub>0.2</sub>O<sub>2</sub>)  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
 (phys. and electrochem. characterization of LiCo<sub>0.8</sub>M<sub>0.2</sub>O<sub>2</sub> (M=Ni,Zr) cathode films for all-solid-state rechargeable thin-film lithium batteries)

RN 113066-91-4 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.8</sub>LiNi<sub>0.2</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.8	7440-48-4
Ni	0.2	7440-02-0
Li	1	7439-93-2

RN 943217-72-9 HCAPLUS

CN Cobalt lithium zirconium oxide (Co<sub>0.8</sub>LiZr<sub>0.2</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Zr	0.2	7440-67-7
Co	0.8	7440-48-4
Li	1	7439-93-2

RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 5 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:117698 HCAPLUS Full-text

DN 146:209722

TI Battery

IN Obana, Yoshiaki; Tokunaga, Takashi; Akashi, Hiroyuki

PA Sony Corporation, Japan

SO U.S. Pat. Appl. Publ., 21pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 20070026311	A1	20070201	US 2006-459514	20060724 <--
	JP 2007059379	A	20070308	JP 2006-141036	20060522 <--
	KR 2007015059	A	20070201	KR 2006-71264	20060728 <--
	CN 1917276	A	20070221	CN 2006-10136308	20060731 <--

PRAI JP 2005-222195 A 20050729 <--  
 JP 2006-141036 A 20060522 <--

AB A battery capable of improving the charge and discharge efficiency even when the battery voltage is set to over 4.2 V is provided. A cathode and an anode are oppositely arranged with an electrolyte and a separator in between. The open circuit voltage in full charge is in the range from 4.25 V to 6.00 V. The cathode has a cathode current collector and a cathode active material layer provided on the cathode current collector. The cathode active material layer contains, as a binder, a polymer with intrinsic viscosity of 2.0 dL/g to 10 dL/g which contains vinylidene fluoride as an element.

IT 193215-53-1P, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.2</sub>LiMn<sub>0.3</sub>Ni<sub>0.5</sub>O<sub>2</sub>) 372492-00-7P, Aluminum cobalt lithium  
 magnesium oxide (Al<sub>0.01</sub>Co<sub>0.98</sub>LiMg<sub>0.01</sub>O<sub>2</sub>)  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material  
 use); PREP (Preparation); USES (Uses)  
 (battery with cathode containing binder)

RN 193215-53-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.2</sub>LiMn<sub>0.3</sub>Ni<sub>0.5</sub>O<sub>2</sub>) (CA INDEX  
 NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.2	7440-48-4
Ni	0.5	7440-02-0
Mn	0.3	7439-96-5
Li	1	7439-93-2

RN 372492-00-7 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.98</sub>LiMg<sub>0.01</sub>O<sub>2</sub>) (CA  
 INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mg	0.01	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

IT 131344-56-4, Cobalt lithiumnickel oxide 147683-99-6,  
 Cobalt lithium zirconium oxide 187144-48-5, Cobalt lithium  
 magnesium oxide 214536-41-1, Cobalt lithium manganese oxide  
 346417-97-8, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 868842-82-4

RL: TEM (Technical or engineered material use); USES (Uses)  
 (battery with cathode containing binder)

RN 131344-56-4 HCAPLUS

CN Cobalt lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Li	x	7439-93-2

RN 147683-99-6 HCAPLUS

CN Cobalt lithium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Li	x	7439-93-2

RN 187144-48-5 HCAPLUS

CN Cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

RN 214536-41-1 HCAPLUS

CN Cobalt lithium manganese oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mn	x	7439-96-5
Li	x	7439-93-2

RN 346417-97-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 868842-82-4 HCAPLUS

CN Aluminum cobalt lithium magnesium zirconium oxide (Al<sub>0.01</sub>Co<sub>0.97</sub>LiMg<sub>0.01</sub>Zr<sub>0.01</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Zr	0.01	7440-67-7
Co	0.97	7440-48-4
Mg	0.01	7439-95-4
Li	1	7439-93-2
Al	0.01	7429-90-5

L84 ANSWER 6 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2007:63351 HCAPLUS Full-text  
 DN 146:166436  
 TI Cathode for lithium secondary battery  
 IN Takezawa, Hideharu; Nishino, Hajime  
 PA Japan  
 SO U.S. Pat. Appl. Publ., 17pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20070015058	A1	20070118	US 2006-485999	20060714 <--
	JP 2007048744	A	20070222	JP 2006-177760	20060628 <--
	KR 2007009447	A	20070118	KR 2006-65914	20060713 <--
	CN 1897331	A	20070117	CN 2006-10105690	20060714 <--
PRAI	JP 2005-205266	A	20050714	<--	

AB A pos. electrode for use in a lithium secondary battery comprises a pos. electrode current collector, and a pos. electrode film which is carried on the pos. electrode current collector and includes a plurality of mixture layers. The pos. electrode film contains, as a pos. electrode active material, two or more kinds of lithium-containing compds. having exothermic initiation temps. different from each other. At least one kind of the two or more kinds of lithium-containing compds. has the exothermic initiation temperature of 300° or higher. A first mixture layer of the plural mixture layers closest to the pos. electrode current collector contains at least one kind of the lithium-containing compound having the exothermic initiation temperature of 300° or higher.

IT 198213-70-6P, Cobalt lithium magnesium oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>)  
 346417-97-8P, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>)  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (cathode for lithium secondary battery)

RN 198213-70-6 HCAPLUS  
 CN Cobalt lithium magnesium oxide (Co<sub>0.98</sub>LiMg<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.98	7440-48-4
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 346417-97-8 HCAPLUS  
 CN Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

IT 182442-95-1, Cobalt lithium manganese nickel oxide  
 919763-80-7, Cobalt lithium manganese nickel oxide  
 (Co<sub>0.1</sub>-0.5Li<sub>1</sub>-1.2Mn<sub>0.1</sub>-0.5Ni<sub>0</sub>-0.8O<sub>2</sub>) 919763-81-8, Aluminum  
 cobalt lithium magnesium oxide ((Al,Co,Li,Mg)<sub>0.102</sub>)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathode for lithium secondary battery)

RN 182442-95-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Mn	x	7439-96-5
Li	x	7439-93-2

RN 919763-80-7 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.1</sub>-0.5Li<sub>1</sub>-1.2Mn<sub>0.1</sub>-0.5Ni<sub>0</sub>-0.8O<sub>2</sub>)  
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.1 - 0.5	7440-48-4
Ni	0 - 0.8	7440-02-0
Mn	0.1 - 0.5	7439-96-5
Li	1 - 1.2	7439-93-2

RN 919763-81-8 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide  
 (Al<sub>0</sub>-0.1Co<sub>0.8</sub>-0.99Li<sub>1</sub>-1.05Mg<sub>0</sub>-0.1O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.8 - 0.99	7440-48-4
Mg	0 - 0.1	7439-95-4
Li	1 - 1.05	7439-93-2
Al	0 - 0.1	7429-90-5

L84 ANSWER 7 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:1286174 HCAPLUS Full-text

DN 146:47821

TI Method of preparation of cathode active material for battery

IN Watanabe, Haruo; Ogisu, Kenji; Morita, Koji; Soma, Masanori; Hosoya,  
 Yosuke; Azuma, Hideto; Ooyama, Tomoyo

PA Sony Corp., Japan

SO U.S. Pat. Appl. Publ., 29pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI US 20060275667	A1	20061207	US 2006-419863	20060523 <--



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JP 2006331940      A      20061207      JP 2005-156030      20050527 <--
JP 2006331941      A      20061207      JP 2005-156031      20050527 <--
JP 2006331943      A      20061207      JP 2005-156033      20050527 <--
KR 2006122779      A      20061130      KR 2006-47609       20060526 <--
CN 1897336         A      20070117      CN 2006-10121255    20060529 <--
PRAI JP 2005-156030      A      20050527 <--
JP 2005-156031      A      20050527 <--
JP 2005-156033      A      20050527 <--

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AB A cathode active material capable of increasing a capacity and improving high temperature characteristics or cycle characteristics, a method of manufacturing it, a cathode using the cathode active material, and a battery using the cathode active material are provided. In a cathode active material contained in a cathode, a coating layer is provided on at least part of a complex oxide particle containing at least Li and Co. The coating layer is an oxide which contains Li and at least one of Ni and Mn.

IT 131344-56-4P, Cobalt lithium nickel oxide 147683-99-6P, Cobalt lithium zirconium oxide 187144-48-5P, Cobalt lithium magnesium oxide 214536-41-1P, Cobalt lithium manganese oxide 387116-18-9P, Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>Li<sub>1.03</sub>Mn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>) 916329-47-0P, Aluminum cobalt lithium magnesium oxide (Al<sub>0.03</sub>Co<sub>0.95</sub>Li<sub>1.03</sub>Mg<sub>0.02</sub>O<sub>2.02</sub>) 916329-48-1P, Aluminum cobalt lithium magnesium oxide (Al<sub>0.01</sub>Co<sub>0.98</sub>Li<sub>1.03</sub>Mg<sub>0.01</sub>O<sub>2.02</sub>) 916329-50-5P, Cobalt lithium zirconium oxide (Co<sub>0.98</sub>Li<sub>1.03</sub>Zr<sub>0.02</sub>O<sub>2.02</sub>)  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (method of preparation of cathode active material for battery)

RN 131344-56-4 HCAPLUS

CN Cobalt lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Li	x	7439-93-2

RN 147683-99-6 HCAPLUS

CN Cobalt lithium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Li	x	7439-93-2

RN 187144-48-5 HCAPLUS

CN Cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

RN 214536-41-1 HCAPLUS

CN Cobalt lithium manganese oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mn	x	7439-96-5
Li	x	7439-93-2

RN 887116-18-9 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co0.33Li1.03Mn0.33Ni0.33O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1.03	7439-93-2

RN 916329-47-0 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al0.03Co0.95Li1.03Mg0.02O2.02) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2.02	17778-80-2
Co	0.95	7440-48-4
Mg	0.02	7439-95-4
Li	1.03	7439-93-2
Al	0.03	7429-90-5

RN 916329-48-1 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (Al0.01Co0.98Li1.03Mg0.01O2.02) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2.02	17778-80-2
Co	0.98	7440-48-4
Mg	0.01	7439-95-4
Li	1.03	7439-93-2
Al	0.01	7429-90-5

RN 916329-50-5 HCAPLUS

CN Cobalt lithium zirconium oxide (Co0.98Li1.03Zr0.02O2.02) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2.02	17778-80-2
Zr	0.02	7440-67-7
Co	0.98	7440-48-4
Li	1.03	7439-93-2

L84 ANSWER 8 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2006:655222 HCAPLUS Full-text  
 DN 145:106870  
 TI Lithium-ion secondary battery  
 IN Lampe-Onnerud, Christina M.  
 PA Boston-Power, Inc., USA  
 SO PCT Int. Appl., 58 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2006071972	A2	20060706	WO 2005-US47383	20051223 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	EP 1831952	A2	20070912	EP 2005-855875	20051223 <--
	R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, YU				
	JP 2008525973	T	20080717	JP 2007-548600	20051223 <--
	US 20070026315	A1	20070201	US 2006-485068	20060712 <--
	US 20080008933	A1	20080110	US 2007-821102	20070621 <--
	WO 2008002486	A2	20080103	WO 2007-US14591	20070622 <--
	WO 2008002486	A3	20080320		
	WO 2008002486	A9	20080529		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				
	CN 101288197	A	20081015	CN 2005-80045007	20070627 <--
	KR 2007100957	A	20071015	KR 2007-717360	20070727 <--
PRAI	US 2004-639275P	P	20041228	<--	
	US 2005-680271P	P	20050512	<--	
	US 2005-699285P	P	20050714	<--	
	WO 2005-US47383	W	20051223	<--	
	US 2006-474056	A2	20060623	<--	
	US 2006-485068	A2	20060712	<--	
AB	In one embodiment, an active cathode material comprises a mixture that includes: at least one of a lithium cobaltate and lithium nickelate; and at				

least one of a manganate spinel represented by an empirical formula of  $\text{Li}(1+x)\text{Mn}_{1-y}\text{A}'_y\text{O}_2$  and an olivine compound represented by an empirical formula of  $\text{Li}(1-x_2)\text{A}'_x\text{MPO}_4$ . In another embodiment, an active cathode material comprises a mixture that includes: a lithium nickelate selected from the group consisting of  $\text{LiCoO}_2$ -coated  $\text{LiNi}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$ , and  $\text{Li}(\text{Ni}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3})\text{O}_2$ ; and a manganate spinel represented by an empirical formula of  $\text{Li}(1+x_7)\text{Mn}_{2-y_7}\text{O}_{7/2}$ . A lithium-ion battery and a battery pack each independently employ a cathode that includes an active cathode material as described above. A method of forming a lithium-ion battery includes the steps of forming an active cathode material as described above; forming a cathode electrode with the active cathode material; and forming an anode electrode in electrical contact with the cathode via an electrolyte. A system comprises a portable electronic device and a battery pack or lithium-ion battery as described above.

IT 131344-56-4, Cobalt lithium nickel oxide 214536-41-1, Cobalt lithium manganese oxide 253868-42-7, Cobalt lithium magnesium titanium oxide 346417-97-8, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$ ) 642999-49-3, Aluminum cobalt lithium magnesium oxide  
 RL: DEV (Device component use); USES (Uses)  
 (lithium-ion secondary battery)

RN 131344-56-4 HCAPLUS

CN Cobalt lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Ni	x	7440-02-0
Li	x	7439-93-2

RN 214536-41-1 HCAPLUS

CN Cobalt lithium manganese oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mn	x	7439-96-5
Li	x	7439-93-2

RN 253868-42-7 HCAPLUS

CN Cobalt lithium magnesium titanium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Ti	x	7440-32-6
Mg	x	7439-95-4
Li	x	7439-93-2

RN 346417-97-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component
-----------	-------	-----------

		Registry Number
O	2	17778-80-2
Co	0.33	7440-48-4
Ni	0.33	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 642999-49-3 HCAPLUS

CN Aluminum cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2
Al	x	7429-90-5

L84 ANSWER 9 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:579802 HCAPLUS Full-text

DN 145:48610

TI Electrode structure for lithium secondary battery

IN Kawakami, Soichiro; Morita, Akira; Ogura, Takao

PA Canon Kabushiki Kaisha, Japan

SO U.S. Pat. Appl. Publ., 30 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20060127773	A1	20060615	US 2005-296460	20051208 <--
	JP 2007165061	A	20070628	JP 2005-358197	20051212 <--
PRAI	JP 2004-358458	A	20041210	<--	
	JP 2005-29843	T0	20050204	<--	
	JP 2005-330663	T0	20051115	<--	

AB In an electrode structure for a lithium secondary battery including: a main active material layer formed from a metal powder selected from silicon, tin and an alloy thereof that can store and discharge and capable of lithium by electrochem. reaction, and a binder of an organic polymer; and a current collector, wherein the main active material layer is formed at least by a powder of a support material for supporting the electron conduction of the main active material layer in addition to the metal powder and the powder of the support material are particles having a spherical, pseudo-spherical or pillar shape with an average particle size of 0.3 to 1.35 times the thickness of the main active material layer. The support material is one or more materials selected from a group consisting of graphite, oxides of transition metals and metals that do not electrochem. form alloy with lithium. Organic polymer compounded with a conductive polymer is used for the binder. There are provided an electrode structure for a lithium secondary battery having a high capacity and a long lifetime, and a lithium secondary battery using the electrode structure and having a high capacity, a high energy d. and a long lifetime.

IT 856700-33-9, Cobalt lithium manganese nickel oxide  
(Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.34</sub>O<sub>2</sub>) 890303-56-7, Cobalt lithium zirconium  
oxide (Co<sub>0.96</sub>LiZr<sub>0.04</sub>O<sub>2</sub>)

RL: DEV (Device component use); USES (Uses)

(electrode structure for lithium secondary battery)

RN 856700-33-9 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.34</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.33	7440-48-4
Ni	0.34	7440-02-0
Mn	0.33	7439-96-5
Li	1	7439-93-2

RN 890303-56-7 HCAPLUS

CN Cobalt lithium zirconium oxide (Co<sub>0.96</sub>LiZr<sub>0.04</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Zr	0.04	7440-67-7
Co	0.96	7440-48-4
Li	1	7439-93-2

L84 ANSWER 10 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:49357 HCAPLUS Full-text

DN 144:131827

TI Secondary lithium battery, zirconium-containing stable  
cathode active mass of coated lithium-nickel-transition metal  
oxides for it, and manufacture of the active mass

IN Miyahara, Michihisa; Shiraishi, Yohei; Tanno, Seiji; Otomo, Mitsuru;  
Koizumi, Tomoyoshi

PA Kureha Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2006019229	A	20060119	JP 2004-198548	20040705 <--
PRAI	JP 2004-198548		20040705	<--	

AB The cathode active mass comprises a coating layer of LiCoaZr<sub>1-a</sub>O<sub>2</sub> (0 < a ≤ 1) and a core of LiNi<sub>x</sub>M<sub>1-x</sub>O<sub>2</sub> (M = Co, Mn, Zr, Ti, B, Al, Ga, and In; 0.5 < x ≤ 1.0; x < 1.0 and M = Zr and optionally other metals shown above when a = 1), wherein the molar ratio of Co content in the coating layer to the total metal content in the core (X) satisfies the relationship of 0.0125 < X < 0.5. The manufacturing method involves (A) dispersing powders of the core material in an aqueous solution containing cobalt nitrate and optionally zirconium nitrate for forming a precursor of the coating layer on the core surface and (B) firing the coated powders.

IT 147683-99-6F, Cobalt lithium zirconium oxide 600177-64-8P

, Cobalt lithium zirconium oxide ((Co,Zr)LiO<sub>2</sub>)

RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)

(coating layer; stable secondary Li battery

cathode active mass of coated Li-Ni-transition metal oxides  
containing Zr)

RN 147683-99-6 HCAPLUS

CN Cobalt lithium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Li	x	7439-93-2

RN 600177-64-8 HCAPLUS

CN Cobalt lithium zirconium oxide ((Co,Zr)LiO2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Zr	0 - 1	7440-67-7
Co	0 - 1	7440-48-4
Li	1	7439-93-2

IT 872580-93-3P, Cobalt lithium manganese nickel oxide  
(Co0.08Li1.05Mn0.05Ni0.87O2)RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)(core; stable secondary Li battery cathode active  
mass of coated Li-Ni-transition metal oxides containing Zr)

RN 872580-93-3 HCAPLUS

CN Cobalt lithium manganese nickel oxide (Co0.08Li1.05Mn0.05Ni0.87O2) (CA  
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.08	7440-48-4
Ni	0.87	7440-02-0
Mn	0.05	7439-96-5
Li	1.05	7439-93-2

L84 ANSWER 11 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2004:836203 HCAPLUS Full-text

DN 143:10384

TI Influence of the synthesis and doping on the morphologic, structural and  
electrochemical properties of LiCo1-xMxO2 (M=Ni, Al, Mg) oxidesAU Castro-Garcia, S.; Senaris-Rodriguez, M. A.; Castro-Couceiro, A.; Julien,  
C.CS Dpto. Quimica Fundamental, Facultade de Ciencias, A Zapateira,  
Universidade da Coruna, Coruna, 15071, SpainSO Boletin de la Sociedad Espanola de Ceramica y Vidrio (2004),  
43(4), 780-786

CODEN: BSCVB9; ISSN: 0366-3175

PB Sociedad Espanola de Ceramica y Vidrio

DT Journal

LA Spanish

AB In this work we have prepared, by a sol-gel method, LiCo1-xMxO2 compds. (M=Ni,  
Al and Mg), in order to study the doping effect in their electrochem. behavior  
as cathodes in lithium-batteries. We have studied the influence of the

synthesis conditions (using various chelating agents for the formation of the gel) on their morphol., structural and electrochem. properties. We have obtained monophasic materials: LiCo<sub>1-x</sub>Ni<sub>x</sub>O<sub>2</sub> (0 ≤ x ≤ 0.8), LiCo<sub>1-x</sub>Mg<sub>x</sub>O<sub>2</sub> (0 ≤ x ≤ 0.05), LiCo<sub>1-x</sub>Al<sub>x</sub>O<sub>2</sub> (0 ≤ x ≤ 0.3) and LiCo<sub>0.5</sub>Ni<sub>0.5-x</sub>Al<sub>x</sub>O<sub>2</sub> (0 ≤ x ≤ 0.3). In general, the samples obtained with succinic acid have better ordered lithium layers than malic samples. The capacity of the Li//LiCo<sub>1-x</sub>M<sub>x</sub>O<sub>2</sub> batteries decrease upon doping. However, more stable charge-discharge cycling performances have been obtained as compared to those displayed by the native oxides. In LiCo<sub>1-x</sub>Mg<sub>x</sub>O<sub>2</sub>, small amts. of MgO appear as secondary phases for 0.05 < x < 0.1. However, these samples show a good electrochem. behavior and it is interesting that the sample with x=0.1 exhibits a lower capacity fading than the undoped sample after the first 30 cycles. The most important effects of the Al-doping in LiCo<sub>1-x</sub>Al<sub>x</sub>O<sub>2</sub> and LiCo<sub>0.5</sub>Ni<sub>0.5-x</sub>Al<sub>x</sub>O<sub>2</sub> are that it increases the bidimensionality of the structure and decreases the particle size; both effects favor the Li-ion diffusion during the charge-discharge process.

IT 101920-93-8, Cobalt lithium nickel oxide (Co<sub>0.5</sub>LiNi<sub>0.5</sub>O<sub>2</sub>)  
 113066-78-7, Cobalt lithium nickel oxide (Co<sub>0.4</sub>LiNi<sub>0.6</sub>O<sub>2</sub>)  
 113066-89-0, Cobalt lithium nickel oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>)  
 113066-90-3, Cobalt lithium nickel oxide (Co<sub>0.6</sub>LiNi<sub>0.4</sub>O<sub>2</sub>)  
 113066-91-4, Cobalt lithium nickel oxide (Co<sub>0.8</sub>LiNi<sub>0.2</sub>O<sub>2</sub>)  
 144419-56-7, Cobalt lithium magnesium oxide (Co<sub>0.95</sub>LiMg<sub>0.05</sub>O<sub>2</sub>)  
 144470-86-0, Cobalt lithium magnesium oxide (Co<sub>0.8</sub>LiMg<sub>0.2</sub>O<sub>2</sub>)  
 198213-72-8, Cobalt lithium magnesium oxide (Co<sub>0.92</sub>LiMg<sub>0.08</sub>O<sub>2</sub>)  
 198213-74-0, Cobalt lithium magnesium oxide (Co<sub>0.9</sub>LiMg<sub>0.1</sub>O<sub>2</sub>)  
 679438-19-8, Cobalt lithium magnesium oxide (Co<sub>0.85</sub>LiMg<sub>0.15</sub>O<sub>2</sub>)  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (synthesis and doping effects on morphol., structure and electrochem. properties of LiCo<sub>1-x</sub>M<sub>x</sub>O<sub>2</sub> (M=Ni,Al,Mg))

RN 101920-93-8 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.5</sub>LiNi<sub>0.5</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Ni	0.5	7440-02-0
Li	1	7439-93-2

RN 113066-78-7 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.4</sub>LiNi<sub>0.6</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.4	7440-48-4
Ni	0.6	7440-02-0
Li	1	7439-93-2

RN 113066-89-0 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.2	7440-48-4
Ni	0.8	7440-02-0



Li | 1 | 7439-93-2

RN 113066-90-3 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.6</sub>LiNi<sub>0.4</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.6	7440-48-4
Ni	0.4	7440-02-0
Li	1	7439-93-2

RN 113066-91-4 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.8</sub>LiNi<sub>0.2</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.8	7440-48-4
Ni	0.2	7440-02-0
Li	1	7439-93-2

RN 144419-56-7 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.95</sub>LiMg<sub>0.05</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.95	7440-48-4
Mg	0.05	7439-95-4
Li	1	7439-93-2

RN 144470-86-0 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.8</sub>LiMg<sub>0.2</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.8	7440-48-4
Mg	0.2	7439-95-4
Li	1	7439-93-2

RN 198213-72-8 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.92</sub>LiMg<sub>0.08</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.92	7440-48-4
Mg	0.08	7439-95-4
Li	1	7439-93-2

RN 198213-74-0 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.9</sub>LiMg<sub>0.1</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.9	7440-48-4
Mg	0.1	7439-95-4
Li	1	7439-93-2

RN 679438-19-8 HCAPLUS

CN Cobalt lithium magnesium oxide (Co0.85LiMg0.15O2) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.85	7440-48-4
Mg	0.15	7439-95-4
Li	1	7439-93-2

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 12 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2003:875565 HCAPLUS Full-text

DN 139:352721

TI Process for preparation of complex lithium metal oxides with enhanced  
cycle life and safety

IN Park, Hong-kyu; Kwon, Yong Hoon; Park, Seong Yong; Kim, Jin On; Lee, Ki  
Young

PA Lg Chem. Ltd., S. Korea

SO PCT Int. Appl., 22 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 2003092099	A1	20031106	WO 2003-KR815	20030422 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	KR 2003083476	A	20031030	KR 2002-22167	20020423 <--
	AU 2003222488	A1	20031110	AU 2003-222488	20030422 <--
	CN 1565063	A	20050112	CN 2003-801140	20030422 <--
	EP 1497876	A1	20050119	EP 2003-717762	20030422 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2005524204	T	20050811	JP 2004-500352	20030422 <--
	US 20040200998	A1	20041014	US 2004-487861	20040226 <--
	US 7235193	B2	20070626		
PRAI	KR 2002-22167	A	20020423	<--	
	WO 2003-KR815	W	20030422	<--	

AB This invention relates to complex lithium metal oxides, which are cathode active materials of a lithium or lithium ion secondary battery with enhanced cycle life and safety, and a process for preparation thereof. The core particles are complex lithium metal oxides capable of absorbing, storing and emitting lithium ions, and a coating layer comprised of amorphous complex lithium cobalt oxides that are formed on the surface of the core particle, which is structurally stable and inactive with electrolytes. Because the amorphous complex lithium cobalt oxides are inactive with electrolytes, the oxides stabilize the surface structure of the complex lithium metal oxide and improve on high temperature storage properties, as well as safety and cycle life.

IT 147683-99-6, Cobalt lithium zirconium oxide 187144-48-5,  
Cobalt lithium magnesium oxide 214536-41-1, Cobalt lithium  
manganese oxide

RL: TEM (Technical or engineered material use); USES (Uses)  
(coating; process for preparation of complex lithium metal oxides with  
enhanced cycle life and safety)

RN 147683-99-6 HCAPLUS

CN Cobalt lithium zirconium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Co	x	7440-48-4
Li	x	7439-93-2

RN 187144-48-5 HCAPLUS

CN Cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

RN 214536-41-1 HCAPLUS

CN Cobalt lithium manganese oxide (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mn	x	7439-96-5
Li	x	7439-93-2

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 13 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2003:757154 HCAPLUS Full-text

DN 139:263344

TI Layered electrodes for lithium cells and batteries

IN Johnson, Christopher S.; Thackeray, Michael M.; Vaughey, John T.; Kahaian,  
Arthur J.; Kim, Jeom-soo

PA The University of Chicago, USA

SO U.S. Pat. Appl. Publ., 28 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20030180616	A1	20030925	US 2003-365286	20030212 <--
	US 7358009	B2	20080415		
PRAI	US 2002-357393P	P	20020215	<--	

AB Lithium metal oxide compds. of nominal formula  $\text{Li}_2\text{MO}_2$ , in which M represents two or more pos. charged metal ions, selected predominantly and preferably from the first row of transition metals are disclosed herein. The  $\text{Li}_2\text{MO}_2$  compds. have a layered-type structure, which can be used as pos. electrodes for lithium electrochem. cells, or as a precursor for the in-situ electrochem. fabrication of  $\text{LiMO}_2$  electrodes. The  $\text{Li}_2\text{MO}_2$  compds. of the invention may have addnl. functions in lithium cells, for example, as end-of-discharge indicators, or as neg. electrodes for lithium cells.

IT 309242-27-1P, Cobalt lithium magnesium nickel titanium oxide  
 $\text{Co}_{0.15}\text{LiMg}_{0.05}\text{Ni}_{0.75}\text{Ti}_{0.05}\text{O}_2$  346417-97-8P, Cobalt lithium  
 manganese nickel oxide  $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$

RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
 (Preparation); USES (Uses)

(layered electrodes for lithium cells and batteries)

RN 309242-27-1 HCAPLUS

CN Cobalt lithium magnesium nickel titanium oxide  
 $(\text{Co}_{0.15}\text{LiMg}_{0.05}\text{Ni}_{0.75}\text{Ti}_{0.05}\text{O}_2)$  (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2
Co	0.15		7440-48-4
Ti	0.05		7440-32-6
Ni	0.75		7440-02-0
Mg	0.05		7439-95-4
Li	1		7439-93-2

RN 346417-97-8 HCAPLUS

CN Cobalt lithium manganese nickel oxide  $(\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2)$  (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2
Co	0.33		7440-48-4
Ni	0.33		7440-02-0
Mn	0.33		7439-96-5
Li	1		7439-93-2

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 14 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2003:677062 HCAPLUS Full-text

DN 139:397855

TI Local structure and electrochemistry of doped lithium cobalt oxides as  
 positive electrode for Li-ion batteries

AU Julien, C.

CS Laboratoire des Milieux Desordonnes et Heterogenes, UMR 7603 Universite  
Pierre et Marie Curie, Paris, 75252/05, Fr.

SO Proceedings - Electrochemical Society (2003), 2001-21(Batteries  
and Supercapacitors), 41-51  
CODEN: PESODO; ISSN: 0161-6374

PB Electrochemical Society

DT Journal

LA English

AB We present the structural and electrochem. properties of doped LiCo<sub>1-y</sub>MyO<sub>2</sub>  
(M=Ni, Al, B, Mg) oxides prepared by various methods, i.e. solid-state  
reaction, wet chemical techniques. The local structure studied by resonance  
spectroscopy (Raman and FTIR) is reported. Synthesis procedures of LiCoO<sub>2</sub>  
cathode materials greatly affect the electrochem. and cycle life  
characteristics of their layered structure. Aluminum substituted oxides show  
interesting features as the presence of Al allows to reduce the grain size and  
enhances the lithium diffusion coeffs. in electrodes.

IT 135573-53-4, Cobalt lithium nickel oxide (Co<sub>0-1</sub>LiNi<sub>0-1</sub>O<sub>2</sub>)  
187144-48-5, Cobalt lithium magnesium oxide  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PRP (Properties); PROC (Process)  
(local structure and electrochem. of doped lithium cobalt oxides as  
pos. electrode for Li-ion batteries)

RN 135573-53-4 HCAPLUS

CN Cobalt lithium nickel oxide ((Co,Ni)LiO<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0 - 1	7440-48-4
Ni	0 - 1	7440-02-0
Li	1	7439-93-2

RN 187144-48-5 HCAPLUS

CN Cobalt lithium magnesium oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Co	x	7440-48-4
Mg	x	7439-95-4
Li	x	7439-93-2

RE.CNT 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 15 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2003:355675 HCAPLUS Full-text

DN 138:371699

TI Cathode active material for a rechargeable lithium battery  
having structural stability and improved cycle life characteristics

IN Cho, Jae-Phil; Park, Byung-Woo; Kim, Yong-Jeong; Kim, Tae-Jun

PA Samsung SDE Co., Ltd., S. Korea

SO U.S. Pat. Appl. Publ., 13 pp.  
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI  US 20030087155      A1   20030508      US 2002-270811      20021015 <--
    US 6916580          B2   20050712
    KR 2003033716      A    20030501      KR 2001-65805      20011024 <--
    JP 2003178759      A    20030627      JP 2002-308368      20021023 <--
PRAI KR 2001-65805      A    20011024 <--

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AB A pos. active material for a rechargeable lithium battery is provided. The pos. active material comprises a lithiated intercalation compound and a coating layer formed on the lithiated intercalation compound. The coating layer comprises a solid-solution compound and an oxide compound having at least two coating elements, the oxide compound represented by the formula:  $MpM'qOr$  wherein M and M' are not the same and are each independently at least one element selected from the group consisting of Zr, Al, Na, K, Mg, Ca, Sr, Ni, Co, Ti, Sn, Mn, Cr, Fe, and V;  $0 < p < 1$ ;  $0 < q < 1$ ; and  $1 < r \leq 2$ , where r is determined based upon p and q. The solid-solution compound is prepared by reacting the lithiated intercalation compound with the oxide compound. The coating layer has a fracture toughness of at least 3.5 MPa $\sqrt{m}$ . A method of making the pos. active material is also provided.

IT 116327-69-6P, Cobalt lithium nickel oxide (Co<sub>0.1</sub>LiNi<sub>0.9</sub>O<sub>2</sub>)  
 RL: DEV (Device component use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses) (aluminum cobalt lithium nickel zirconium oxide solid solution-coated, substrate particles, strontium doped; cathode active material for rechargeable lithium battery having structural stability and improved cycle life characteristics)

RN 116327-69-6 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.1</sub>LiNi<sub>0.9</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.1	7440-48-4
Ni	0.9	7440-02-0
Li	1	7439-93-2

IT 521980-94-9DP, Aluminum cobalt lithium zirconium oxide (Al<sub>0-0.2</sub>Co<sub>0.4-1</sub>LiZr<sub>0-0.2</sub>O<sub>2</sub>), solid solns. with aluminum zirconium oxide  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (coatings, on metal oxides; cathode active material for rechargeable lithium battery having structural stability and improved cycle life characteristics)

RN 521980-94-9 HCAPLUS

CN Aluminum cobalt lithium zirconium oxide (Al<sub>0-0.2</sub>Co<sub>0.4-1</sub>LiZr<sub>0-0.2</sub>O<sub>2</sub>) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Zr	0 - 0.2	7440-67-7
Co	0.4 - 1	7440-48-4
Li	1	7439-93-2
Al	0 - 0.2	7429-90-5

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

AN 2003:140923 HCAPLUS Full-text  
 DN 138:388026  
 TI Local structure and electrochemistry of lithium cobalt oxides and their doped compounds  
 AU Julien, C.  
 CS UMR 7603 , Laboratoire des Milieux Desordonnes et Heterogenes, Universite Pierre et Marie Curie, Paris, 75252, Fr.  
 SO Solid State Ionics (2003), 157(1-4), 57-71  
 CODEN: SSIOD3; ISSN: 0167-2738  
 PB Elsevier Science B.V.  
 DT Journal  
 LA English  
 AB We present the structural and electrochem. properties of LiCoO<sub>2</sub> and doped LiCo<sub>1-y</sub>MyO<sub>2</sub> (M=Ni, Al, B, Mg) oxides prepared by various methods, i.e. solid-state reaction, wet chemical and film deposition techniques. The local structure studied by resonance spectroscopy (Raman and FTIR) is reported. Synthesis procedures of LiCoO<sub>2</sub> cathode materials greatly affect the electrochem. and cycle life characteristics of their layered structure.  
 IT 135573-53-4, Cobalt lithium nickel oxide ((Co,Ni)LiO<sub>2</sub>)  
 527744-92-9, Cobalt lithium magnesium oxide ((Co,Mg)LiO<sub>2</sub>)  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
 (local structure and electrochem. of lithium cobalt oxides and their doped compds.)  
 RN 135573-53-4 HCAPLUS  
 CN Cobalt lithium nickel oxide ((Co,Ni)LiO<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0 - 1	7440-48-4
Ni	0 - 1	7440-02-0
Li	1	7439-93-2

RN 527744-92-9 HCAPLUS  
 CN Cobalt lithium magnesium oxide ((Co,Mg)LiO<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mg	0 - 1	7439-95-4
Li	1	7439-93-2

RE.CNT 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 17 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2002:447285 HCAPLUS Full-text  
 DN 137:22377  
 TI Cathode active mass for secondary lithium battery and its manufacture  
 IN Kohiro, Kenji; Nagase, Ryuichi  
 PA Nikko Materials Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002170562	A	20020614	JP 2000-364075	20001130 <--
	TW 488107	B	20020521	TW 2001-90104839	20010302 <--
	US 20020102204	A1	20020801	US 2001-828734	20010409 <--
	US 6497854	B2	20021224		
	CN 1356736	A	20020703	CN 2001-119783	20010530 <--
	CN 1188923	C	20050209		

PRAI JP 2000-364075 A 20001130 &lt;--

AB The cathode active mass is a layer structured compound  $\text{Li}_x\text{Ni}_{1-a-b-c-d}\text{Co}_a\text{M}_1\text{bM}_2\text{cM}_3\text{dO}_2$  ( $\text{M}_1, \text{M}_2, \text{M}_3 = \text{Ti, Mg, B, and/or Al}$ ), where,  $1.0 \leq x \leq 1.2, 0.1 \leq a \leq 0.3, 0.005 \leq b \leq 0.1, 0.005 \leq c \leq 0.1, 0.005 \leq d \leq 0.1$  and  $0.115 \leq a+b+c+d \leq 0.4$ . The mass is prepared by mixing copptd.  $\text{Ni}_{1-a-b-c-d}\text{Co}_a\text{M}_1\text{bM}_2\text{cM}_3\text{d}(\text{OH})_2$  with Li compound, baking the mixture in an O atmospheric at  $480-850^\circ$  (especially  $480-630^\circ$ ) for 15-40 h, crushing the fired compound, and again baking the crushed compound at  $700-850^\circ$  for 3-10 h.

IT 245429-22-5, Cobalt lithium nickel oxide ( $\text{Co}_{0.2}\text{Li}_{1.1}\text{Ni}_{0.8}\text{O}_2$ )

RL: DEV (Device component use); USES (Uses)

(compsns. and manufacture of layered lithium cobalt nickel oxides from copptd. materials for secondary lithium battery cathodes)

RN 245429-22-5 HCAPLUS

CN Cobalt lithium nickel oxide ( $\text{Co}_{0.2}\text{Li}_{1.1}\text{Ni}_{0.8}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2
Co	0.2		7440-48-4
Ni	0.8		7440-02-0
Li	1.1		7439-93-2

IT 434343-58-5

RL: DEV (Device component use); USES (Uses)

(substitute; compsns. and manufacture of layered lithium cobalt nickel oxides from copptd. materials for secondary lithium battery cathodes)

RN 434343-58-5 HCAPLUS

CN Aluminum cobalt lithium magnesium nickel titanium oxide ( $\text{Al}_{0.02}\text{Co}_{0.14}\text{Li}_{1.1}\text{Mg}_{0.02}\text{Ni}_{0.8}\text{Ti}_{0.02}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O	2		17778-80-2
Co	0.14		7440-48-4
Ti	0.02		7440-32-6
Ni	0.8		7440-02-0
Mg	0.02		7439-95-4
Li	1.1		7439-93-2
Al	0.02		7429-90-5

L84 ANSWER 18 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2002:272908 HCAPLUS Full-text

DN 136:297394

TI Solid electrolyte cell

IN Goto, Shuji; Hosoya, Mamoru; Endo, Takahiro

PA Sony Corporation, Japan



SO Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1195826	A2	20020410	EP 2001-123774	20011004 <--
	EP 1195826	A3	20031126		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2002117844	A	20020419	JP 2000-306876	20001005 <--
	JP 3982165	B2	20070926		
	US 20020094481	A1	20020718	US 2001-966864	20010928 <--
	US 6720113	B2	20040413		
	TW 523952	B	20030311	TW 2001-90124127	20010928 <--
	CN 1349273	A	20020515	CN 2001-139323	20010930 <--
	CN 1181590	C	20041222		
	CA 2358294	A1	20020405	CA 2001-2358294	20011003 <--
	MX 2001PA09973	A	20030820	MX 2001-PA9973	20011003 <--
	KR 826814	B1	20080502	KR 2001-61125	20011004 <--
PRAI	JP 2000-306876	A	20001005	<--	

AB A solid electrolyte cell in which cell characteristics are not deteriorated even on overdischarge to the cell voltage of 0 V, such that the shape of the cell encapsulated in the laminate film is maintained. The cell includes a cathode containing a compound represented by the general formula  $\text{Li}_x\text{Fe}_y\text{MPO}_4$  where  $0.05 \leq x \leq 1.2$ ,  $0 \leq y \leq 0.8$ , and M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, an anode and a solid electrolyte. An electrode unit 1 comprised of the cathode and the anode layered together with interposition of the solid electrolyte is encapsulated with a laminate film 2.

IT 116327-69-6, Cobalt lithium nickel oxide  $\text{Co}_{0.1}\text{LiNi}_{0.9}\text{O}_2$   
 408331-94-2, Cobalt lithium nickel oxide  $((\text{Co}, \text{Ni})\text{LiO}-2\text{O}_2)$   
 408331-95-3, Cobalt lithium manganese oxide  $((\text{Co}, \text{Mn})\text{LiO}-2\text{O}_2)$   
 408332-03-6, Cobalt lithium magnesium oxide  $((\text{Co}, \text{Mg})\text{LiO}-2\text{O}_2)$   
 408332-42-3, Cobalt lithium manganese oxide  $((\text{Co}, \text{Mn})2\text{LiO}-2\text{O}_4)$

RL: DEV (Device component use); USES (Uses)  
 (solid electrolyte cell)

RN 116327-69-6 HCAPLUS

CN Cobalt lithium nickel oxide  $(\text{Co}_{0.1}\text{LiNi}_{0.9}\text{O}_2)$  (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.1	7440-48-4
Ni	0.9	7440-02-0
Li	1	7439-93-2

RN 408331-94-2 HCAPLUS

CN Cobalt lithium nickel oxide  $((\text{Co}, \text{Ni})\text{LiO}-2\text{O}_2)$  (9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0 - 1	7440-48-4
Ni	0 - 1	7440-02-0
Li	0 - 2	7439-93-2

RN 408331-95-3 HCAPLUS

CN Cobalt lithium manganese oxide ((Co,Mn)LiO-2O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mn	0 - 1	7439-96-5
Li	0 - 2	7439-93-2

RN 408332-03-6 HCAPLUS

CN Cobalt lithium magnesium oxide ((Co,Mg)LiO-2O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mg	0 - 1	7439-95-4
Li	0 - 2	7439-93-2

RN 408332-42-3 HCAPLUS

CN Cobalt lithium manganese oxide ((Co,Mn)2LiO-2O4) (9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	4	17778-80-2
Co	0 - 2	7440-48-4
Mn	0 - 2	7439-96-5
Li	0 - 2	7439-93-2

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 19 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2002:216203 HCAPLUS Full-text

DN 136:250258

TI Method for preparation of lithiated oxide materials with a well  
layered crystal structure for battery cathodes

IN Paulsen, Jens Martin; Kieu, Loan Yen; Ammundsen, Brett Graeme

PA Ilion Technology Corporation, USA; Pacific Lithium New Zealand Limited

SO Eur. Pat. Appl., 25 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	EP 1189296	A2	20020320	EP 2001-302209	20010309 <--
	EP 1189296	A3	20050511		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 20030022063	A1	20030130	US 2001-799935	20010306 <--
	US 6660432	B2	20031209		
	JP 2002110167	A	20020412	JP 2001-181459	20010615 <--
	JP 3571671	B2	20040929		
PRAI	US 2000-232551P	P	20000914	<--	

AB A single phase cathodic material for use in an electrochem. cell is represented by the formula:  $\text{Li}[\text{Li}_x\text{Co}_y\text{Al}_{1-x-y}]\text{O}_2$  wherein  $A = [\text{Mn}_z\text{Ni}_{1-z}]$ ; wherein  $x$  is a numerical value ranging from approx. 0.00 to approx. 0.16; wherein  $y$  is a numerical value ranging from approx. 0.1 to approx. 0.30; wherein  $z$  is a numerical value ranging from approx. 0.40 to approx. 0.65; and wherein  $\text{Li}_x$  is included in transition metal layers of the structure and/or wherein the material comprises a layered R-3m crystal structure having a  $c/a$  ratio greater than approx. 1.012.

IT 403985-65-9P, Cobalt lithium manganese nickel oxide  
( $\text{Co}_{0.05}\text{Li}_{1.1}\text{Mn}_{0.42}\text{Ni}_{0.43}\text{O}_2$ ) 403985-66-0P, Cobalt lithium  
manganese nickel oxide ( $\text{Co}_{0.04}\text{Li}_{1.13}\text{Mn}_{0.41}\text{Ni}_{0.42}\text{O}_2$ ) 403985-67-1P  
, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.09}\text{Li}_{1.08}\text{Mn}_{0.41}\text{Ni}_{0.41}\text{O}_2$ )  
403985-68-2P, Cobalt lithium manganese nickel oxide  
( $\text{Co}_{0.09}\text{Li}_{1.12}\text{Mn}_{0.39}\text{Ni}_{0.39}\text{O}_2$ ) 403985-69-3P, Cobalt lithium  
manganese nickel oxide ( $\text{Co}_{0.16}\text{Li}_{1.06}\text{Mn}_{0.39}\text{Ni}_{0.39}\text{O}_2$ ) 403985-70-6P  
, Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.15}\text{Li}_{1.11}\text{Mn}_{0.37}\text{Ni}_{0.37}\text{O}_2$ )  
403985-72-8P 403985-73-9P, Cobalt lithium manganese  
nickel oxide ( $\text{Co}_{0.15}\text{Li}_{1.09}\text{Mn}_{0.38}\text{Ni}_{0.38}\text{O}_2$ )

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)

(method for preparation of lithiated oxide materials with well  
layered crystal structure for battery cathodes)

RN 403985-65-9 HCAPLUS

CN Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.05}\text{Li}_{1.1}\text{Mn}_{0.42}\text{Ni}_{0.43}\text{O}_2$ ) (CA  
INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.05	7440-48-4
Ni	0.43	7440-02-0
Mn	0.42	7439-96-5
Li	1.1	7439-93-2

RN 403985-66-0 HCAPLUS

CN Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.04}\text{Li}_{1.13}\text{Mn}_{0.41}\text{Ni}_{0.42}\text{O}_2$ ) (CA  
INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.04	7440-48-4
Ni	0.42	7440-02-0
Mn	0.41	7439-96-5
Li	1.13	7439-93-2

RN 403985-67-1 HCAPLUS

CN Cobalt lithium manganese nickel oxide ( $\text{Co}_{0.09}\text{Li}_{1.08}\text{Mn}_{0.41}\text{Ni}_{0.41}\text{O}_2$ ) (CA  
INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.09	7440-48-4
Ni	0.41	7440-02-0
Mn	0.41	7439-96-5
Li	1.08	7439-93-2

RN 403985-68-2 HCAPLUS  
 CN Cobalt lithium manganese nickel oxide (Co0.09Li1.12Mn0.39Ni0.39O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.09	7440-48-4
Ni	0.39	7440-02-0
Mn	0.39	7439-96-5
Li	1.12	7439-93-2

RN 403985-69-3 HCAPLUS  
 CN Cobalt lithium manganese nickel oxide (Co0.16Li1.06Mn0.39Ni0.39O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.16	7440-48-4
Ni	0.39	7440-02-0
Mn	0.39	7439-96-5
Li	1.06	7439-93-2

RN 403985-70-6 HCAPLUS  
 CN Cobalt lithium manganese nickel oxide (Co0.15Li1.11Mn0.37Ni0.37O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.15	7440-48-4
Ni	0.37	7440-02-0
Mn	0.37	7439-96-5
Li	1.11	7439-93-2

RN 403985-72-8 HCAPLUS  
 CN Cobalt lithium magnesium nickel titanium oxide  
 (Co0.2LiMg0.04Ni0.7Ti0.05O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.2	7440-48-4
Ti	0.05	7440-32-6
Ni	0.7	7440-02-0
Mg	0.04	7439-95-4
Li	1	7439-93-2

RN 403985-73-9 HCAPLUS  
 CN Cobalt lithium manganese nickel oxide (Co0.15Li1.09Mn0.38Ni0.38O2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

Component	Ratio	Registry Number
O	2	17778-80-2
Co	0.15	7440-48-4
Ni	0.38	7440-02-0
Mn	0.38	7439-96-5
Li	1.09	7439-93-2

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 20 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2002:98448 HCAPLUS Full-text

DN 136:170192

TI Lithium-containing cobalt composite oxide for improving overcharge resistance and battery capacity in secondary lithium battery and its manufacturing method

IN Kuribayashi, Isao

PA K.E.E. Y. K., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002037629	A	20020206	JP 2000-256444	20000725 <--
PRAI	JP 2000-256444		20000725	<--	

AB The Li-containing Co composite oxide has a general formula  $\text{Li}_a\text{M}_b\text{Ni}_c\text{Co}_{1-b-c}\text{O}_2$  (M=Ti, Ga, Zr, Cr, Al Cu and/or Zn;  $a=1.00-1.03$ ;  $b=0.0003-0.015$ ;  $c=0-0.3$ ). The Li-containing Co composite oxide is manufactured by mixing  $\geq 1$  of Li compds. selected from  $\text{Li}_2\text{CO}_3$ ,  $\text{LiOH}$ , and Li acetate with  $\geq 1$  of Co compds. selected from  $\text{Co}_3\text{O}_4$ ,  $\text{Co}(\text{OH})_2$ , and  $\text{CoCO}_3$  at a Li/Co mol. ratio of 1.05-1.25, preheating at 900-1050°, pulverizing, mixing with  $\geq 1$  of acetates, nitrates, sulfates, carbonates, hydroxides, and oxides of Ti, Ga, Zr, Cr, Al, Cu and Zn, heating at 800-1050°, extracting excess Li with distilled H<sub>2</sub>O or deionized water to make the Li/Co mol. ratio 1.00-1.03 and drying.

IT 396728-52-2P, Cobalt lithium nickel oxide ( $\text{Co}_{0.79}\text{Li}_{1.02}\text{Ni}_{0.21}\text{O}_2$ )

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(Al-doped; lithium-containing cobalt composite oxide for improving overcharge resistance and battery capacity in secondary lithium battery and its manufacturing method)

RN 396728-52-2 HCAPLUS

CN Cobalt lithium nickel oxide ( $\text{Co}_{0.79}\text{Li}_{1.02}\text{Ni}_{0.21}\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.79	7440-48-4
Ni	0.21	7440-02-0
Li	1.02	7439-93-2

IT 396728-50-0P, Cobalt lithium zirconium oxide ( $\text{Co}_{0.98}\text{Li}_{1.01}\text{Zr}_{0.02}\text{O}_2$ )

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(Cu- and Zn-doped; lithium-containing cobalt composite oxide for improving overcharge resistance and battery capacity in secondary

lithium battery and its manufacturing method)

RN 396728-50-0 HCAPLUS

CN Cobalt lithium zirconium oxide (Co<sub>0.98</sub>Li<sub>1.01</sub>Zr<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Zr	0.02	7440-67-7
Co	0.98	7440-48-4
Li	1.01	7439-93-2

L84 ANSWER 21 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2001:901026 HCAPLUS Full-text

DN 136:40171

TI Secondary battery with multiple oxide mixture  
cathode

IN Tsujimoto, Takashi; Yamamoto, Yoshikatsu; Hisayama, Junji; Kumakawa,  
Masashi

PA Sony Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 2001345102	A	20011214	JP 2001-102690	20010330 <--
PRAI	JP 2000-93379	A	20000330	<--	

AB The battery has a cathode composed of a 1st multiple oxide of Li, Mn, and B  
and/or a metal other than Mn; and a 2nd multiple oxide of Li, co, and another  
metal or B.

IT 113066-91-4, Cobalt lithium nickel oxide (Co<sub>0.8</sub>LiNi<sub>0.2</sub>O<sub>2</sub>)

144470-86-0, Cobalt lithium magnesium oxide (Co<sub>0.8</sub>LiMg<sub>0.2</sub>O<sub>2</sub>)

RL: DEV (Device component use); USES (Uses)

(compns. of multiple oxide mixts. for secondary  
lithium battery cathodes)

RN 113066-91-4 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.8</sub>LiNi<sub>0.2</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.8	7440-48-4
Ni	0.2	7440-02-0
Li	1	7439-93-2

RN 144470-86-0 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.8</sub>LiMg<sub>0.2</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.8	7440-48-4
Mg	0.2	7439-95-4
Li	1	7439-93-2

L84 ANSWER 22 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2001:451322 HCAPLUS Full-text

DN 135:63759

TI Secondary lithium batteries having improved cathodes

IN Yamaki, Takahiro; Honbo, Hidetoshi; Kita, Fusaji; Idzu, Tetsuo

PA Hitachi Ltd., Japan; Hitachi Maxell, Ltd.

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001167763	A	20010622	JP 1999-349782	19991209 <--
	JP 2006173137	A	20060629	JP 2006-18522	20060127 <--
PRAI	JP 1999-349782	A3	19991209	<--	

AB The batteries have cathodes containing (1) Li Co oxide active masses containing Mg, Al, Mn, Ti, and/or Sr and (2) C-based conductors with amorphous C surface layers. The batteries have high energy d. and cycle performance.

IT 142447-13-0, Cobalt lithium manganese oxide (Co<sub>0.97</sub>LiMn<sub>0.03</sub>O<sub>2</sub>)

345664-06-4, Cobalt lithium magnesium oxide (CoLiMg<sub>0.03</sub>O<sub>2</sub>)

345664-09-7, Cobalt lithium magnesium titanium oxide

(Co<sub>0.98</sub>LiMg<sub>0.01</sub>Ti<sub>0.02</sub>O<sub>2</sub>)

RL: DEV (Device component use); USES (Uses)

(Li batteries having cathodes containing Li Co metal oxides and conductors covered with amorphous C for high energy d. and cycle performance)

RN 142447-13-0 HCAPLUS

CN Cobalt lithium manganese oxide (Co<sub>0.97</sub>LiMn<sub>0.03</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.97	7440-48-4
Mn	0.03	7439-96-5
Li	1	7439-93-2

RN 345664-06-4 HCAPLUS

CN Cobalt lithium magnesium oxide (CoLiMg<sub>0.03</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	1	7440-48-4
Mg	0.03	7439-95-4
Li	1	7439-93-2

RN 345664-09-7 HCAPLUS

CN Cobalt lithium magnesium titanium oxide (Co<sub>0.98</sub>LiMg<sub>0.01</sub>Ti<sub>0.02</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.98	7440-48-4
Ti	0.02	7440-32-6

Mg	0.01	7439-95-4
Li	1	7439-93-2

L84 ANSWER 23 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2001:221502 HCAPLUS Full-text

DN 135:35140

TI Cathodic behavior of (Co, Ti, Mg)-doped LiNiO<sub>2</sub>

AU Chowdari, B. V. R.; Subba Rao, G. V.; Chow, S. Y.

CS Department of Physics, National University of Singapore, Singapore, 110260, Singapore

SO Solid State Ionics (2001), 140(1,2), 55-62

CODEN: SSIOD3; ISSN: 0167-2738

PB Elsevier Science B.V.

DT Journal

LA English

AB Single-phase lithium nickel oxides with the formula LiNi<sub>0.8</sub>Co<sub>0.2-2y</sub>Ti<sub>y</sub>Mg<sub>y</sub>O<sub>2</sub>, y=0.0-0.075 have been prepared and characterized. Their electrochem. properties as cathode during charging and discharging are discussed. Thermal behavior of the charged cathodes was studied by differential scanning calorimetry (DSC). Results show that the cathodic behavior of compds. with y=0.0 and 0.03 and those with y=0.05 and 0.075 are similar with respect to the initial irreversible capacity, suppression of phase transitions, cycling behavior and capacity fading. The composition with y=0.05 shows a cathodic capacity of 120 mA h/g at the 0.5 C rate and 2.5-4.4 V voltage window with only 7% fading over 40 cycles. The thermal behavior of the charged cathode with y=0.05 is improved compared to y=0.0 and 0.03. A qual. explanation for the observed cathodic behavior with various y values is offered in terms of the occupancy of the magnesium-ions in the Li and Ni layers in the lattice.

IT 113066-89-0, Cobalt lithium nickel oxide co<sub>0.2</sub>lini<sub>0.8</sub>o<sub>2</sub>

343942-36-9 343942-39-2 343942-41-6

RL: DEV (Device component use); USES (Uses)

(cathodic behavior of (Co, Ti, Mg)-doped LiNiO<sub>2</sub>)

RN 113066-89-0 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.2</sub>LiNi<sub>0.8</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.2	7440-48-4
Ni	0.8	7440-02-0
Li	1	7439-93-2

RN 343942-36-9 HCAPLUS

CN Cobalt lithium magnesium nickel titanium oxide

(Co<sub>0.14</sub>LiMg<sub>0.03</sub>Ni<sub>0.8</sub>Ti<sub>0.03</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
Co	0.14	7440-48-4
Ti	0.03	7440-32-6
Ni	0.8	7440-02-0
Mg	0.03	7439-95-4
Li	1	7439-93-2

RN 343942-39-2 HCAPLUS

CN Cobalt lithium magnesium nickel titanium oxide



(Co<sub>0.1</sub>LiMg<sub>0.05</sub>Ni<sub>0.8</sub>Ti<sub>0.05</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.1	7440-48-4
Ti	0.05	7440-32-6
Ni	0.8	7440-02-0
Mg	0.05	7439-95-4
Li	1	7439-93-2

RN 343942-41-6 HCAPLUS

CN Cobalt lithium magnesium nickel titanium oxide  
(Co<sub>0.05</sub>LiMg<sub>0.08</sub>Ni<sub>0.8</sub>Ti<sub>0.08</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.05	7440-48-4
Ti	0.08	7440-32-6
Ni	0.8	7440-02-0
Mg	0.08	7439-95-4
Li	1	7439-93-2

RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 24 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2001:19982 HCAPLUS Full-text

DN 134:165571

TI Combustion synthesis and characterization of substituted lithium cobalt oxides in lithium batteries

AU Julien, C.; Camacho-Lopez, M. A.; Mohan, T.; Chitra, S.; Kalyani, P.; Gopukumar, S.

CS Laboratoire des Milieux Desordonnes et Heterogenes, UMR 7603, Universite Pierre et Marie Curie, Paris, 75252, Fr.

SO Solid State Ionics (2000), 135(1-4), 241-248

CODEN: SSIOD3; ISSN: 0167-2738

PB Elsevier Science B.V.

DT Journal

LA English

AB Substituted lithium cobaltates LiCo<sub>0.5</sub>M<sub>0.5</sub>O<sub>2</sub> (where M = Ni, Mg, Mn, Zn) have been synthesized by the combustion of mixts. obtained from aqueous solns. containing the resp. metal nitrates, LiNO<sub>3</sub>, and urea in stoichiometric amts. The mixts., when dried and fired at 700°C, ignite and yield submicron-sized powders. Phys. properties of the synthesized products are discussed in the light of structural (XRD, SEM) and spectroscopic (FTIR and Raman) measurements. XRD results show that most of the compds. have a structure similar to LiCoO<sub>2</sub>, while LiCo<sub>0.5</sub>Mn<sub>0.5</sub>O<sub>2</sub> crystallizes with the modified-spinel structure. FTIR and Raman measurements probed the cationic environment in LiCo<sub>0.5</sub>M<sub>0.5</sub>O<sub>2</sub> structures in order to investigate cation distribution and local distortion in the lithiated lattice. Performances of lithiated oxides as cathode materials in lithium batteries and substitutive effect on electrochem. properties have been investigated. Stable charge-discharge features have been observed for Li//LiCo<sub>0.5</sub>M<sub>0.5</sub>O<sub>2</sub> cells cycled in the potential range from 3.0 to 4.2 V when Ni and Zn dopants are used.

IT 101920-93-8P, Cobalt lithium nickel oxide Co<sub>0.5</sub>LiNi<sub>0.5</sub>O<sub>2</sub>118819-08-2P, Cobalt lithium manganese oxide Co<sub>0.5</sub>LiMn<sub>0.5</sub>O<sub>2</sub>

324753-31-3P, Cobalt lithium magnesium oxide (Co<sub>0.5</sub>LiMg<sub>0.5</sub>O<sub>2</sub>)

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(combustion synthesis and characterization of substituted lithium cobalt oxides in lithium batteries)

RN 101920-93-8 HCAPLUS

CN Cobalt lithium nickel oxide (Co<sub>0.5</sub>LiNi<sub>0.5</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Ni	0.5	7440-02-0
Li	1	7439-93-2

RN 118819-08-2 HCAPLUS

CN Cobalt lithium manganese oxide (Co<sub>0.5</sub>LiMn<sub>0.5</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	1	7439-93-2

RN 324753-31-3 HCAPLUS

CN Cobalt lithium magnesium oxide (Co<sub>0.5</sub>LiMg<sub>0.5</sub>O<sub>2</sub>) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Mg	0.5	7439-95-4
Li	1	7439-93-2

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L84 ANSWER 25 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1998:596036 HCAPLUS Full-text

DN 129:205207

OREF 129:41630h,41631a

TI Secondary lithium batteries with lithium and magnesium  
containing oxide cathodes

IN Igawa, Akiko; Tsuruoka, Shigeo; Yoshikawa, Masanori; Muranaka, Kiyoshi;  
Komatsu, Yoshimi; Yamauchi, Shuko

PA Hitachi, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10241691	A	19980911	JP 1997-354358	19971224 <--
	JP 3624663	B2	20050302		
PRAI	JP 1996-343041	A	19961224	<--	

AB The batteries use cathodes composed layer structured  $\text{LiMO}_2$ , where M = Mn, Co, Ni, and/or Fe, and part of Li is replaced by Mg. The cathode active mass is preferably  $\text{LiwMgvNixMlyNzO}_2$ , where M1 = Mn, Co, and/or Fe, N = Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or B,  $0 \leq w \leq 1.2$ ,  $0.001 \leq v \leq 0.02$ ,  $0.5 \leq x < 0.85$ ,  $0.05 \leq y \leq 0.5$ , and  $0 \leq z \leq 0.2$ ;  $\text{LiwMgvCoxM2z'O}_2$ , where M2 = Ni, Mn, Fe, Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, YH, Bi and/or B, and  $0 \leq z \leq 0.5$ ;  $\text{LiwMgvMnxM3z'O}_2$ , where M3 = Ni, Co, Fe, Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or B; or  $\text{LiwMgvFexM4z'O}_2$ , where M4 = Ni, Co, Mn, Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or B.

IT 212076-12-5P 212076-27-2P, Cobalt lithium manganese nickel oxide ( $\text{Co}_0.1\text{Li}_0-1.2\text{Mn}_0.1\text{Ni}_0.8\text{O}_2$ ) 212076-58-9P 212076-60-3P 212077-01-5P

RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)  
(comps. and properties of magnesium containing lithium transition metal oxide cathodes for secondary lithium batteries)

RN 212076-12-5 HCAPLUS

CN Cobalt lithium magnesium nickel tin oxide ( $\text{Co}_0.2\text{Li}_0-1.2\text{Mg}_0.01\text{Ni}_0.7\text{Sn}_0.1\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.2	7440-48-4
Sn	0.1	7440-31-5
Ni	0.7	7440-02-0
Mg	0.01	7439-95-4
Li	0 - 1.2	7439-93-2

RN 212076-27-2 HCAPLUS

CN Cobalt lithium manganese nickel oxide ( $\text{Co}_0.1\text{Li}_0-1.2\text{Mn}_0.1\text{Ni}_0.8\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.1	7440-48-4
Ni	0.8	7440-02-0
Mn	0.1	7439-96-5
Li	0 - 1.2	7439-93-2

RN 212076-58-9 HCAPLUS

CN Cobalt lithium magnesium manganese tin oxide ( $\text{Co}_0.7\text{Li}_0-1.2\text{Mg}_0.01\text{Mn}_0.2\text{Sn}_0.1\text{O}_2$ ) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.7	7440-48-4
Sn	0.1	7440-31-5
Mn	0.2	7439-96-5
Mg	0.01	7439-95-4
Li	0 - 1.2	7439-93-2

RN 212076-60-3 HCAPLUS

CN Cobalt lithium magnesium nickel tin oxide ( $\text{Co}_0.7\text{Li}_0-1.2\text{Mg}_0.01\text{Ni}_0.2\text{Sn}_0.1\text{O}_2$ )

(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.7	7440-48-4
Sn	0.1	7440-31-5
Ni	0.2	7440-02-0
Mg	0.01	7439-95-4
Li	0 - 1.2	7439-93-2

RN 212077-01-5 HCAPLUS

CN Cobalt lithium magnesium manganese tin oxide  
 (Co0.2Li0-1.2Mg0.01Mn0.7Sn0.102) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.2	7440-48-4
Sn	0.1	7440-31-5
Mn	0.7	7439-96-5
Mg	0.01	7439-95-4
Li	0 - 1.2	7439-93-2

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(FILE 'HOME' ENTERED AT 09:32:14 ON 08 JAN 2009)  
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FILE 'HCAPLUS' ENTERED AT 09:33:06 ON 08 JAN 2009

L1 1 S US20070196736/PN OR (US2006-594459# OR WO2005-JP3723 OR JP200  
 E TAKAHASHI/AU  
 L2 11 S E3  
 E TAKAHASHI Y/AU  
 L3 1514 S E3-E7,E22,E26,E27  
 E TAKAHASHI NAME/AU  
 L4 208 S E4  
 E YASUFUMI/AU  
 E YASU FUMI/AU  
 E KINOSHITA/AU  
 L5 512 S E3-E5,E19  
 E KINOSHITA NAME/AU  
 L6 52 S E4  
 E AKIRA/AU  
 L7 21 S E3,E65,E122  
 E TODE/AU  
 L8 23 S E24,E28,E29  
 E SHINGO/AU  
 L9 1 S E31  
 E HASEGAWA/AU  
 L10 5 S E3  
 E HASEGAWA K/AU  
 L11 749 S E3,E4,E58,E64  
 E HASEGAWA NAME/AU  
 L12 91 S E4  
 E KAZUHIRO/AU

L13 1 S E3  
     E KAZU HIRO/AU  
 L14 1 S E7  
     E FUJIMOTO/AU  
 L15 3 S E3  
     E FUJIMOTO H/AU  
 L16 637 S E3-E5,E46,E77  
     E FUJIMOTO NAME/AU  
 L17 27 S E4  
     E HIROYUKI/AU  
 L18 11 S E3,E8  
     E FUJI MOTO/AU  
 L19 11 S E6  
     E NAKANE/AU  
 L20 2 S E3  
     E NAKANE I/AU  
 L21 89 S E3,E8  
 L22 9 S E111  
     E IKURO/AU  
     E FUJITANI/AU  
     E FUJITANI S/AU  
 L23 282 S E3,E13-E17  
     E FUJITANI NAME/AU  
 L24 3 S E4  
     E SHIN/AU  
 L25 2 S E3  
     E SHIN FUJI/AU  
     E SHIN F/AU  
     E SHIN NAME/AU  
 L26 95 S E4,E5  
     E SANYO/CO  
 L27 30845 S E3/PA,CS,CO  
 L28 20225 S E65-E124/CO,PA,CS  
     E E79+ALL  
 L29 21224 S E2+RT OR E70 OR E2-E70/PA,CS  
     SEL RN L1

FILE 'REGISTRY' ENTERED AT 09:41:30 ON 08 JAN 2009

L30 3 S E1-E3  
 L31 7930 S (LI/ELS OR LITHIUM OR 7439-93-2/CRN) AND (CO/ELS OR COBALT OR  
 L32 153 S L31 AND (ZR/ELS OR ZIRCONIUM OR 7440-67-7/CRN)  
 L33 904 S L31 AND (MG/ELS OR MAGNESIUM OR 7439-95-4/CRN)  
 L34 1028 S L32,L33  
 L35 271 S L34 AND (AL/ELS OR ALUMINUM OR 7440-34-8/CRN)  
 L36 62 S L34 AND (TI/ELS OR TITANIUM OR 7440-32-6/CRN)  
 L37 17 S L34 AND (SN/ELS OR TIN OR 7440-31-5/CRN)  
 L38 22 S L32 AND 4/ELC.SUB  
 L39 103 S L33 AND 4/ELC.SUB  
 L40 8 S L34 AND 5/ELC.SUB AND (ZR AND MG)/ELS  
 L41 9 S L37 NOT (FE OR HF OR P)/ELS  
 L42 39 S L36 NOT (S OR CE OR K OR NB OR B OR DY OR V OR BE OR SC OR GA  
 L43 183 S L35 NOT (S OR CE OR K OR NB OR B OR DY OR V OR BE OR SC OR GA  
 L44 99 S L43 NOT (NI OR MN)/ELS  
 L45 95 S L44 NOT (SI OR NA OR TL)/ELS  
 L46 1 S L30 AND MG/ELS  
 L47 267 S L38-L42,L45,L46  
     SAV TEMP L47 LAURA594A/A  
 L48 4185 S L31 AND (NI/ELS OR NICKEL OR 7440-02-0/CRN)  
 L49 2859 S L31 AND (MN/ELS OR MANGANESE OR 7439-96-5/CRN)  
 L50 453 S L48 AND 4/ELC.SUB

L51 401 S L49 AND 4/ELC.SUB  
 L52 1038 S L49 AND L48 AND 5/ELC.SUB  
 L53 1 S L30 AND L48-L52  
 L54 1892 S L50-L53  
 SAV TEMP L54 LAURA594B/A  
 L55 2 S L54 NOT TIS/CI  
 L56 1890 S L54 NOT L55

FILE 'HCAPLUS' ENTERED AT 10:08:55 ON 08 JAN 2009

L57 293 S L47  
 L58 3374 S L56  
 L59 111 S L57 AND L58  
 L60 99 S L59 AND H01M/IPC, IC, ICM, ICS, EPC  
 E BATTERY/CT  
 L61 65772 S E4+OLD,NT OR E5+OLD,NT OR E6+OLD,NT OR E7+OLD,NT  
 E E3+ALL  
 E E1  
 E E8+ALL  
 L62 10981 S E2+OLD,NT OR E3+OLD,NT OR E4+OLD,NT  
 E BATTERIES/CT  
 E E3+ALL  
 L63 149719 S E1 OR E2+OLD,NT OR E3+OLD,NT OR E4+OLD,NT OR E5+OLD,NT  
 L64 111 S L59 AND L61-L63  
 L65 111 S L60, L64  
 L66 21 S L1-L29 AND L65  
 L67 12 S L65 AND PY<=2006 NOT P/DT  
 L68 85 S L65 AND (PD<=20060926 OR PRD<=20060926 OR AD<=20060926) AND P  
 L69 44 S L68 AND US/PC, PRC, AC  
 L70 41 S L68 NOT L69  
 L71 17 S L70 AND PD<=20060926  
 L72 24 S L70 NOT L71  
 L73 14 S L66 AND L67, L68  
 L74 78 S L67, L69, L71, L73  
 L75 37 S L74 AND ?LAYER?  
 L76 34 S L74 AND MIX?  
 L77 53 S L75, L76  
 L78 26 S L77 AND (NONAQ? OR NON AQUEOUS?)  
 L79 30 S L73, L78  
 L80 25 S L77 NOT L79  
 L81 22 S L80 AND SECONDARY  
 L82 3 S L80 NOT L81  
 L83 25 S L80-L82  
 L84 25 S L83 AND ?CATHOD?  
 L85 28 S L79 AND ?CATHOD?  
 L86 2 S L79 NOT L85  
 L87 30 S L85, L86  
 L88 30 S L87 AND SECONDARY

FILE 'HCAPLUS' ENTERED AT 10:18:05 ON 08 JAN 2009

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